The Builder.

SATURDAY, MAY 27, 1854.

BYRON says something about—

"the perils that environ
The man who meddles with cold iron:"

and although he certainly did not mean iron in the shape of girders and columns, the remark may be quite correctly extended to those who without proper knowledge take upon themselves the use and disposition of these important elements of a fire-proof construction. The fall of the cotton-mill at Oldham in 1844, not to mention half a dozen other disasters, may be pointed to as showing the want of judgment and of knowledge that has been displayed in the use of this material; and even in buildings of later date, evidence of ignorance of the laws which govern its strength, or of great inattention to what these laws should teach, may often be observed.

Mr. Fairbairn's new work "On the Application of Cast and Wrought Iron to Building Purposes" is eminently calculated to diffuse correct information on these heads; and we cordially recommend it to the study of all our readers,—even to those most versed in the subject, because it records the most recent experiments, and describes the latest important application of them.* It consists of three parts and an appendix: No. 1 treats of *cast*-iron beams for supporting the floors of buildings, including compound or trussed cast-iron beams or girders: No. 2, of *wrought*-iron beams for the same purpose, with experiments on trellis-girders; and No. 3, of the construction of fire-proof warehouses, and gives a description of the enormous pile of buildings known as the Saltaire Mill, near Bradford, in Yorkshire—a mill so large that, when it was opened last year, 3,500 guests sat down to dinner in the combing-shed without being hot or crowded! One main object of the book is to recommend (as we have often done, and that, too, at a time when there were fewer to agree with us than there are now) "the advantages of wrought-iron beams or joists, in substitution of the more cumbersome and uncertain ones of cast-iron now in general use." Our objections to trussed girder-beams are also fully borne out by the experiments recorded in these pages, and the able theoretical investigations of Mr. Tate.

The first instance on record of the successful application of cast-iron beams to building purposes appears to be in a mill built by Messrs. Philips and Lee, of Manchester, in 1801, for which Boulton and Watt designed the beams and columns. Unaided by previous experiments, Watt made a tolerably correct approximation to the form which affords the greatest strength with a given quantity of material, and yet so much does strength depend on the form, that the same quantity of metal that Watt's beam contained might be run into a shape but slightly different which would carry at least one-third more weight. The form adopted by Watt prevailed however for a quarter of a century, and then (1827) Mr. Hodgkinson commenced his inquiry at our author's works, and published the results in the "Memoirs of the Manchester Philosophical Society." Mr. Fairbairn had himself previously made some experiments with a view to improve the design of cast-iron beams, and so too had Tredgold. The latter adopted and recommended the beam with equal flanges at top and bottom as the strongest and best form. (Fig. 1.) The correctness of this conclusion, however, was refuted by experiment, and it was conclusively shown that the strength was increased by enlarging the size of the bottom

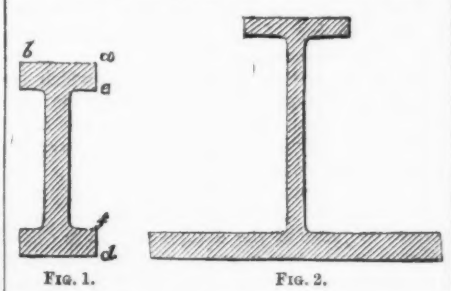


Fig. 1.

Fig. 2.

flange, and as shown by fig. 2, which is now considered the section of greatest strength.

The introduction of the new form of beam gave increased confidence to constructors, and enabled them to increase the distance between supporting columns from 14 feet to 20 feet, and then to 25 feet. In bridges, Mr. Fairbairn thinks, where the span does not exceed 40 feet, this form of girder may be used with perfect safety, if proper precautions are taken to ensure sound and perfect castings.

Truss-beams grew out of the knowledge that wrought iron possesses great powers of resistance to extension, while cast iron presents great resistance to compression. In these beams wrought iron is solely employed to give strength to the bottom part of the beam by its tensile resistance, while cast iron is employed in the top to resist the compression; and if the two materials could be brought to act in perfect concert, the arrangement would doubtless effect great economy of material; but it appears clear that this is impracticable. Under the most favourable circumstances, there is very little gained in the strength of cast-iron beams by the addition of malleable iron truss-rods.

Beams wholly of wrought iron are of recent origin. At first the box-beam was employed,

Fig. 3.

Fig. 4.

of which we give a section (fig. 3), but Mr. Fairbairn gives the preference to the plate-beam, (fig. 4.), on account of its simplicity of construction, and he dwells at some length on the advantages which may be gained by its introduction on a large scale in the building of warehouses, cotton and flax mills, and dwelling-houses. Amongst the advantages is "the scope which it gives for an extension of space to any distance commensurate with the convenience of the establishment, or the taste of the architect or engineer. Most of the improved cotton-mills are from 60 to 65 feet in width, with two or three rows of columns, at distances of 15 to 16 feet across the mill, and from 9 to 10 feet in the direction of its length. These columns present serious obstructions to the convenient arrangement and free working of the machinery, but they cannot well be avoided where cast-iron beams are used. By the employment of wrought iron they quickly vanish, as one row of columns in the middle, with only two beams in width, not only meets the objection, but removes all doubts as to the security of the structure. In these constructions, however, it must be borne in mind that an increase of space is attended with a considerable increase of expense; but when the latter is not a serious consideration, fire-proof mills might be built upwards of 60 feet in width without the introduction of a single column or any other obstruction whatever. In large public buildings this may be effected with perfect ease, and the beams so constructed as to carry a load of 4 to 5 tons to the square yard."

In a building which requires a centre column with a distance of 30 feet between the bearings, as shown in the following cut (fig. 5), the beams, 31 feet 6 inches long and 30 feet between the supports, may be composed of plates 22 inches deep, $\frac{5}{16}$ths thick, and angle iron $\frac{3}{8}$ths of an inch thick, riveted on both sides. The breaking weight of this beam Mr. Fairbairn puts at 27·5 tons in the middle, or 55 tons distributed equally over the surface.

Assuming that the cost of cast-iron beams and wrought iron plate girders be nearly the same, although he is of opinion that the latter might be made to be even cheaper than cast iron, we have in the case of the wrought iron not half the weight of metal to carry; and, moreover, the superior lightness of the wrought iron will enable us to fix the beams in their places at considerably less cost.

"Should this description of beam become general in its application, it is more than probable that all those under 12 cwt. might be delivered at once, of the required form, from the rolling-mill; and it would be premature to

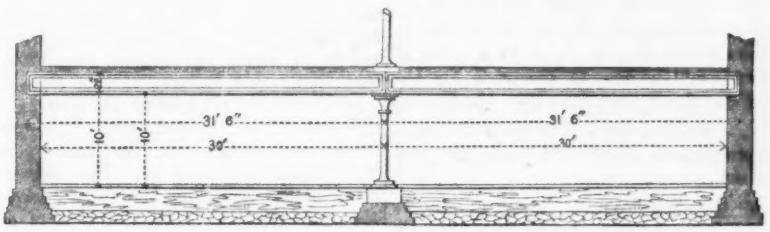


Fig. 5.

assume, that even the larger sizes, such as we have just described, could not be manufactured in the same way. The skill and intelligence of the iron manufacturers of this country have surmounted greater difficulties; and I have no doubt that a demand has only to be created in order to insure perfect success in all the manipulations connected with that important process. If this could be accomplished, a very important saving of the mineral treasures of the country would be effected; nearly two-thirds of the metal would be saved, and the price (supposing the beams to be taken from the rolls), reduced to nearly one-half, or from 16*l.* to 8*l.* or 10*l.* per ton. Under these circumstances, cast-iron would be no longer admissible for such a purpose, and buildings would be rendered much more secure from the chance of failure and equally secure from the ravages of fire."

We have before now recommended that Government should offer a sufficiently large premium, say 1,000*l.* for the production of the best machinery to roll large girders.

In the manufacturing districts many of the newly-erected buildings are made fire-proof; and in the construction of warehouses for the reception of merchandise elsewhere, the same system is being adopted to a certain extent, and will be more so. The author points out the urgent necessity of building all warehouses so as to be secure against fire, and gives the following as the principles on which they should be constructed:—

"1. The whole of the building to be composed

* On the Application of Cast and Wrought Iron to Building Purposes. By William Fairbairn, C.E. F.R.S. &c. John Weale, 59, High Holborn. 1854.

of non-combustible materials, such as iron, stone, or brick.

"2. In order to prevent fire, whether arising from accident or spontaneous combustion, every opening or crevice communicating with the external atmosphere to be closed.

"3. An isolated stone or iron staircase (well protected on every side by brick or stone walls) to be attached to every story; and the staircase to be furnished with a line of water-pipes, communicating with the mains in the streets, and ascending to the top of the building.

"4. In a range of stores, the different warehouses to be divided by strong partition-walls, in no case less than 18 inches thick, and no more openings to be made than are absolutely necessary for the admission of goods and light.

"5. That the iron columns, beams, and brick arches be of strength sufficient not only to support a continuous dead pressure, but to resist the force of impact to which they are subject by the falling of heavy goods upon the floors.

"Lastly. That in order to prevent accident from intense heat melting the columns, in the event of fire in any of the rooms, a current of cold air be introduced into the hollow of the columns from an arched tunnel under the floors."

Mr. Fairbairn inclines to the belief that wrought-iron plates, one-fourth of an inch thick, 3 feet wide, and bent in the segmental form of an arch, 10 feet wide, with ribs of T iron at the junctions, the whole carried on rolled beams, having the haunches filled up with concrete to form level floors, will take the place of cast-iron beams and brick arches before long; and he includes full illustrations of the plan. To give a notion of the size of the structures in which fire-proof construction is being employed, he points to the cotton-mill of the Messrs. Whittaker, near Ashton-under-Line.

"The main building is 300 feet long, 60 feet wide inside, and six stories high. It contains, including the weaving-shed and warehouse, 24,000 square yards of flooring, about 40,000 spindles, and 1800 looms. It cards, spins, and weaves into cloth about 54,000 yards, or 30 miles of calico per day. In the transmissive machinery it gives motion to 92 or nearly 100 spur and bevel wheels, 4,800 feet of shafting, on which are fixed 1,250 drums or pulleys for driving the different machines; the whole of which weighs 460 tons. This great weight, exclusive of the preparatory and finishing machinery, is kept in motion, at a velocity varying from 50 to 200 revolutions per minute, by two engines of the nominal power of 300 horses, but whose actual duty is equal to a force of upwards of 800 horses, in operation for ten hours per day throughout the year. Taking the year at 316 working days, this gives the enormous production of 17,064,000 yards, or 9,480 miles of calico per annum."

Beside the Saltaire-mill, however, already mentioned, it must "hide its diminished head." That pile is six stories high, 550 feet in length, 50 feet in width, and about 72 feet in height! The top story, being above the entrance archway and engine-houses, extends the whole length, and is supposed to be the largest room in Europe, not excepting the long gallery of the Paris Louvre. The whole structure is fire-proof, with stone walls, cast-iron columns, and hollow brick arches. Of this building, however, we may speak more fully another time: our present purpose is to make known the scope of Mr. Fairbairn's treatise, and recommend the study of it.

Bridgewater Exhibition in aid of Church Restoration.—An exhibition of works of art, manufactures, natural curiosities, &c. is to be opened on 1st August, at Bridgewater, in aid of the parish church restoration fund.

WINDOW JAMB FROM SANTA MARIA DEI MIRACOLI, VENICE.

The church from which this elegant specimen is taken is one of the gems of the so-called "pestilent Renaissance." Count Cicognara gives us the history of this building, which is not a little curious. This church was the offspring of a public competition, which was conducted in a manner singularly like the way in which competitions are conducted now. From an ancient document now existing it appears that about the year 1480 a committee was formed to judge of the designs sent in in competition for the new church. One was selected, but the document omits to state the name of the designer! (Very like a nineteenth century proceeding). The committee then met again to determine who was to carry out the design! (Another great similarity). This task was deputed to Pietro Lombardo, who it may be supposed, as it often happens now, had some friend on the committee. The designs were given to Pietro Lombardo, who went to work and finished the shell; when he came again to the committee and informed them that they had selected a design which did not provide for a nave ceiling, and in which the choir had been forgotten altogether! "Then," said the committee, "you must design these yourself!" What had become of the unfortunate architect who made the original design history does not relate, but in the year 1489 the church was completed,—ceiling, choir, and all, and if imagination may be allowed to fill up the blank, we may rest sure that Lombardo presented the committee with a very tolerable bill of extras. If we take this description and only alter the names, it would do almost *verbatim* for the history of the proceedings of some English country town committee, and yet this happened in the days and native city of Titian and Tintoret. So much for "the foundations," now for the superstructure.

This is a small church of a very simple and beautiful plan. The nave is oblong, with a wood ceiling and a richly-carved western gallery. The choir is square on plan surmounted by a cupola on pendentives, with exquisite little circular windows filled with stained glass in the tympana of the arches. This choir is elevated on a lofty flight of steps, having a balustrade and wall on either side, having two small doorways and two exquisite little marble pulpits corbelled out. The choir arch, the altar-rails, and the seats for the clergy, are of the most rich and fanciful design. Casts of many of these details now decorate the Renaissance Court of the Crystal Palace at Sydenham. Externally the church presents a composition of two fanciful orders, two superb doorways, and that beautiful appendage to Venetian architecture, a semicircular roof. The windows are all semicircular-headed, with beautiful splayed and moulded jambs. It is the internal jamb of the choir windows (singularly omitted in Cicognara) which is given in the annexed engraving. The most noticeable features in this elegant composition are the alternation and contrast of two different kinds of ornament. The one sort boldly and deeply cut, the other sort very lightly and delicately so. The one sort *incised* in the moulding, the other *relieved upon* the moulding. This is a species of contrast that was thoroughly understood by the *cinque centisti*, and is a substitute, in richly-ornamented compositions, for a contrast between ornament and plain surface. A. B.

ON THE OPEN SPACES OF OUR METROPOLIS.

The somewhat exclusive title of my paper induces a very natural wish on the part of its author, that on examination there may be found in it "more than meets the eye," in the words themselves, though I fear I must not allow myself to indulge in such a consolatory aspiration; for on glancing over our great Metropolitan chart, I observe but comparatively few important sites left unencumbered by ever-expanding bricks and mortar, with the bright exception of "London's silent highway," the majestic Thames!

The immediate purport of this paper is to secure (as far as may be practicable) from future encroachments such open spaces as are now left to us; an attempt which I am the more induced to make by the now daily increasing desire in corporate and parochial bodies to adorn and improve our cities and towns. With this view it has occurred to me that some memoranda culled from the "wise saws" of our old Chronicles, and from the "modern instances" of our living authors, might afford useful information for our guidance: these, with my humble services as your Cicerone, I now offer during half an hour's imaginary ramble through the "open spaces of our metropolis."

Proposing at the outset to take "high ground," I can only regret that I have not a "Mons Capitolinus" for my summit level. In the absence of so crowning an eminence, I thought I could establish a Mons Palatinus on Tower-hill as my starting point, for Fitzstephen says, "on the east of London stands the Palatine Tower," but having consulted Dugdale and Wren, I believe the Palatine Tower referred to must have been at Castle Baynard: we must therefore, I consider, be content with Tower-hill without such lofty pretensions.

The historical associations connected with this spot are of intense interest, but on this occasion I feel that I must confine my remarks to the topographical part of my subject.

Stow describes the site thus:—"Tower-hill, sometime a large plot of ground, now greatly straitened by encroachments (unlawfully made and suffered), for gardens and houses." I am inclined to think, however, that these encroachments have since been removed to make way for two of the most successful buildings of the present century, the Trinity-house and the Mint, which stand on a very airy and refreshing open breathing-spot, which I have always found more free from fog and smoke than any other in the metropolis. I must not venture into the precincts of the Tower itself: the military engineers having taken possession of the architect's department, any remarks on my part might, perhaps, not be considered coming within the civil bounds of professional etiquette.

Descending from my Palatine flight, I approach the less aspiring "Fish-street-hill," which is, however, not without its glories, for upon it "was one great house which pertained for some time to Edward the Black Prince:" it formed also the main approach to old London-bridge, and it still possesses two of Wren's choicest works, the Monument, and the church of St. Magnus.

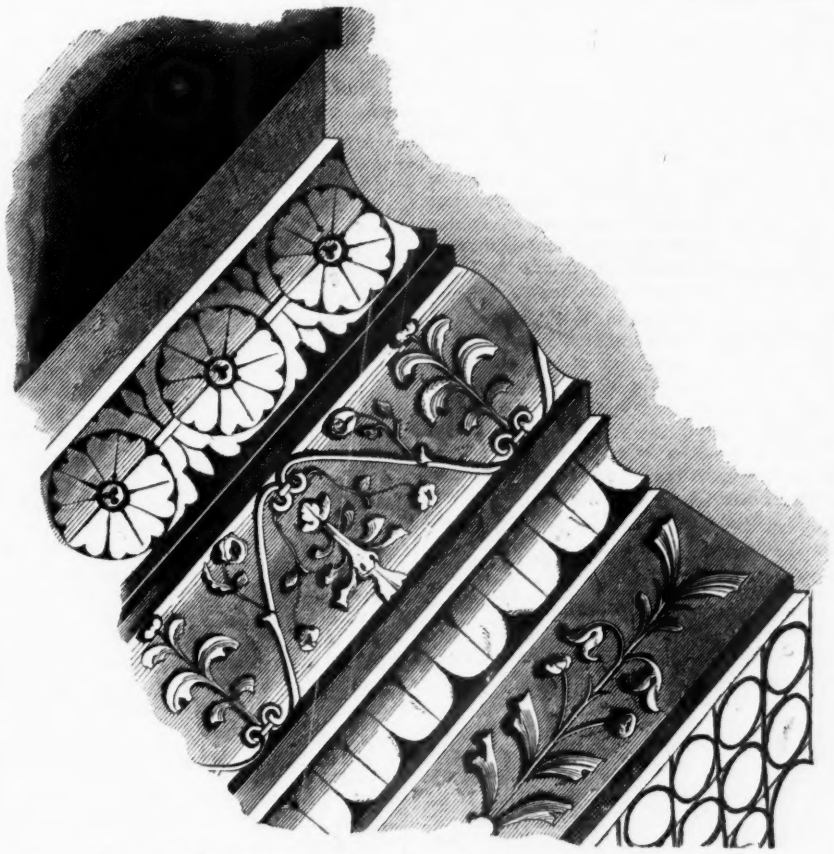
Travelling onward, I will not detain you at St. Mary-at-Hill, St. Dunstan's, Dowgate, or St. Bennet's-hills, nor need I stop on the declivity to the Fleet river (now arched over), by Ludgate on the south line of main thoroughfare, nor on that of the north by Newgate,

"Where from Snow-hill, black steepy torrents run;"

a Charybdis more dreaded by civic navigators than the Scylla-like obstructions of Middle-row; but even this omnibus-engulfing vortex may, I hope, before long be raised to its proper level: we surely need not despair when we see the energetic doings of the London corporation in the immediate vicinity, and know that one of its most influential officers, in his grand and comprehensive plan for a "central city terminus," made one "fell swoop" of this abominable blockade of progress and free communications.

Although I have for many years been acquainted with Saffron-hill, I have not found it to be a *district* possessing many attractions. I will therefore proceed with you to the more verdant and salubrious height of Primrose-hill (London's "Aventine mount," if you please), once the favourite resort of Londoners. It forms part of a large estate belonging to Eton College, and although its immediate site is, I trust, for ever secured to the public, its once picturesque ascent and tree-crowned summit are now sadly shorn of their former beauties: bricks and mortar have displaced its verdure, and I fear the most indefatigable botanist would now find great difficulty in discovering a solitary specimen of the flower from which the hill derives its name.

I possess a small view of Primrose-hill taken in its flourishing days by that truly English artist Thomas Girtin, the fellow-student of



WINDOW JAMB FROM SANTA MARIA DEI MIRACOLI, VENICE.

Turner, and one of the first to lead the way to that perfection to which the art of painting in water-colours attained, before the modern style of "relievo" in body colour was introduced.

Our parks come next in the order of my series. St. James'-park was first formed by Henry VIII. but it appears to have reached its zenith in the reign of Charles II. who is said to have employed a Dr. Morrison upon its embellishment: others claim for Le Notre the merit of laying out the grounds, which contain about 87 acres. Rosamond's pond, the canal, and the decoy, have all now disappeared; and though the antiquary may lament their loss, the lovers of the picturesque are perhaps of opinion, that the present appearance of the park is fully as agreeable as it could have been in the days of the "Merrie Monarch," Nell Gwynne, Killigrew, and his Grace of Buckingham.

The adjacent Green-park was originally called upper St. James'-park: it contains about 56 acres, but was formerly larger, a portion having been taken off in the reign of George III. to enlarge the gardens of Buckingham House. On the east side there are some noble mansions. Spencer House (the work of Vardy), one of our palatial gems; Stafford House, and Bridgewater House. I regret I cannot extend my admiration to the royal buildings on the opposite boundary of this park.

Hyde-park is stated to have been enclosed with brick walls in the time of Charles II. It was formerly a deer park, in which the French ambassador hunted with Edward VI. in 1550. It has always been celebrated for its drives and promenades. Pepys relates, that he used to ride there in his coach, and that on one occasion he met the Duke of York, "who did eye my wife mightily." If the gossiping secretary could see Hyde-park at the present day, I wonder what his exclamations would be upon the Colossus from the Monte Cavallo! and on the Cavalio perched upon the Arco Colosso!

George IV. when Regent, gave us an additional metropolitan lung in the park named after his title, and we are indebted to the skill of the late Mr. Nash for its general arrangement and plan: it contains, with its surrounding terraces, altogether about 450 acres.

At the eastern extremity of London we have Victoria-park (another modern creation), and on my list I next find Whetstone-park; but as I am not acquainted with any beauties in it to describe, nor the number of acres to enumerate, I will pass on to Battersea-park, which can scarcely yet be considered *in esse;* while Highbury-park, which I fear is still *in nubibus*, I have not ventured to include in my catalogue.

Our public gardens may not inappropriately follow our parks. Kensington-gardens are "*par excellence*" the *gardens* of the metropolis: they originally contained only 26 acres, to which Queen Anne added 30, and George II.'s Queen 300, making altogether 356 acres, where—

> "The dames of Britain oft in crowds repair,
> To gravel walks and unpolluted air,
> Here while the town in damps and darkness lies,
> They breathe in sunshine, and see azure skies."

Spring-gardens, which in the time of Charles I. and II. had a bathing-pond, pheasant-yard, and bowling-green, in the reign of Victoria present no other rural feature than the name.

Privy-gardens have in like manner undergone a change, and bricks and mortar have now invaded the fair "three and a quarter acres," which Pepys describes as having been laid out in his time in sixteen compartments, having a standing statue in the centre of each.

The Temple-gardens are fortunately still preserved to us in nearly all their integrity, represented in Canaletto's views: long, long, may they continue with their green plots, and flowers, and fountains "sparkling in the sun," and in the sweet words of Elia, "So may the fresh-coloured and cleanly nursery-maid, who, by leave, airs her playful charge in your stately gardens, drop her prettiest blushing curtsy as ye pass, reductive of juvenescent emotion."

Gray's-inn-gardens are also well preserved, and I expect are not very far different from what they were in the days of the *Spectator* and the *Tatler*, saving the encroachments of Verulam and Raymond's buildings. Lord Bacon is said to have planted some of the trees; and Howell, writing from Venice, in 1621, to Mr. Richard Altham, in Gray's-inn, says, "I would I had you here (in Venice), with a wish, and you would not desire in haste to be at Gray's-inn, though I hold your walks to be the pleasantest place about London, and that you have there the choicest society." Mr. Cunningham, in his instructive "Hand-book of London" observes, that the gardens in Charles II.'s time possessed an uninterrupted view towards Highgate and Hampstead. "We are stepping westward," says Mr. Cunningham; "Moorfields gave way to Gray's-inn, Gray's-inn to the Mall in St. James's-park; the Mall to the Ring, and the Ring to the Long Walk in Kensington-gardens."

Hatton-gardens' flourishing days seem to have departed in Evelyn's time; for the good knight describes the foundations being laid out "for a longe street and buildings designed for a little towne, lately an ample garden."

Many of the City companies' halls have gardens attached to them, the principal of which are those belonging to Drapers' Hall, in Throgmorton-street, which contain nearly two acres. These gardens are interesting to the London antiquary from the circumstances so minutely related by Stow, of the arbitrary proceedings, in 1541, of Thomas Cromwell, Earl of Essex. Stow's father had a garden there, of half of which the Earl deprived him: he tells us, "No warning was given him, nor other answer, when he spake to the surveyors of that work, but that their master, Sir Thomas, commanded them so to do: no man durst go to argue the matter, but each man lost his land, and my father paid his whole rent, which was 6s. 6d. the year, for that half which was left." Old Stow adds, "Thus much of my own knowledge have I thought good to note, that the sudden rising of some men causeth them to forget themselves." Ward, in his "London Spy," commends these gardens as a fashionable promenade "an hour before dinner-time." In 1552, we find the following regulations for these gardens:—"The gardyner to suffer no strangers to bowle, in case there be any of the company disposed to bowle in the place; neither to take erbys or fruite."

In our own days, we have our Zoological and Botanical gardens, richly compensating us for the loss of the Bear-garden in Bankside, the Dog and Duck in St. George's-fields, and the Cock-pit at Whitehall.

The fields of London as well as our gardens require some notice, and although it is complained that we have now "no more fields," we have still the open spaces, if not "the daisy'd banks embroidered o'er." Of these, for extent, Lincoln's-inn-fields claim the first notice. The earliest accounts describe them as the resort of bad characters, and as being used for breaking in horses.

In the *Daily Journal*, 9th July, 1735, we find that "the plan for beautifying Lincoln's-inn-fields is now before his Grace the Duke of Newcastle: there are to be four iron gates, one at each corner, and dwarf walls with iron palisades: this plan has been agreed to by the inhabitants."

In the reign of Charles II. Thomas Sadler, a notorious thief, who had the supreme daring to steal the mace and purse of Lord Chancellor Finch, made his mock procession, with his booty, at night, through Lincoln's-inn-fields; and, in our own days, mobs have assembled there to agitate questions of supposed political grievances.

On the south side of the square is the College of Surgeons, originally the work of Dance, but since altered and enlarged by Sir Charles Barry. On the west, stand Newcastle House, Powis House, and Lindsey House, the works of Inigo Jones: on the north side, is the Museum (formerly the residence) of Sir John Soane, a real lover and munificent patron of art, whose liberal feeling towards this Institute must always be gratefully remembered.

The east side of Lincoln's-inn-fields, which was formerly separated from the adjoining gardens by a low wall, now presents a successful group of buildings in the mediæval style, the first important work of a young friend of mine, who appears determined that the name of Hardwick shall continue to be associated with success in art, and worthy of the recent honour so deservedly bestowed by the Institute on his esteemed father. We have all heard that the area of Lincoln's-inn-fields is equal to the base of the great Pyramid. I must honestly confess myself no advocate for covering this most noble "of our open spaces" with buildings, however

useful or ornamental they may be; though we appear by no means anxious to avail ourselves of this our largest "open space," by providing good access to it.

Moorfields, within my recollection, were bounded on the south side by a long gloomy foreign-looking building, with pavilions at the ends, enclosed by a high brick wall, with entrance piers surmounted by those master-pieces of Cibber, so characteristic of the abode of which they appeared to form a part. We must all rejoice that this hospital has been removed to a more open and spacious situation in St. George's-fields, where, thanks to the philanthropy and common sense of the age, the lunatic is now treated with skill and kindness, and that, immediately opposite to the site of the former repulsive fabric, there now stands a building devoted to the purposes of literature and science.

Casting a glance only at Goodman's-fields, Spital-fields, Tothill-fields, Spa-fields, and passing through Bartholomew-close, we enter that celebrated field, where, in days of yore, a Lord Mayor of London won his spurs, and William Walworth's unerring dagger became the heraldic emblem of London's chivalry.

The site of Smithfield is as full of historical interest as Tower-hill itself, and its reminiscences are about as painful: whatever may be its future destination, I feel confident that those who have the control will devote it to the purposes best suited to the requirements of the age, with a due regard to the interests of the adjoining Royal Hospital of St. Bartholomew.

The squares of London are well deserving a few words of notice: they form one of the most agreeable features of our metropolis, and I am not acquainted with any continental city in which they are equalled in point of number or in general arrangement.

St. James'-square, formed in 1676, has always been inhabited by the gentry and nobility. There are some noble mansions in it,—the residence of our noble President,—Norfolk House, by Brettingham, Lichfield House by Athenian Stuart, and London House, by the present accomplished professor of architecture at the Royal Academy.

Grosvenor-square, so called after Sir Richard Grosvenor, who died in 1732, also possesses many noble mansions, and has more of an aristocratic air than any other of our London squares. An equestrian statue of George III. formerly in the centre, has disappeared. Portman-square, commenced in 1764, was not completed till twenty years afterwards. Manchester-square was formed in 1776. Cavendish-square was laid out in 1718: the north side, which was reserved for the residence of the Duke of Chandos, has been since built over, the two centre houses being, I believe, from the designs of Sir William Chambers. On the west side stands Harcourt-house, inhabited by the Duke of Portland, which presents with its high court walls and "*porte-cochère*," more of the appearance of a Parisian mansion than any other house in London. The equestrian statue in the centre is that of the Duke of Cumberland, and on the south side there has lately been placed a statue of the lamented Lord George Bentinck.

Hanover-square, named in honour of George I. was formed about 1718. This square, in connection with George-street, has always struck me as one of the most scenic architectural displays that London presents: the street expanding towards the square, the unique and elegant style of the surrounding mansions, the judicious mixture of red brick and stone, Chantrey's statue, and the successful ecclesiastical work of James, altogether produce the most agreeable effect.

Leicester-square was built about 1635. On the north side was formerly the residence of the Prince of Wales, father of George III. Hogarth, Sir Joshua Reynolds, and the celebrated John Hunter, the surgeon, dwelt here; and in St. Martin's-street adjoining, the immortal Newton lived.

I do not know whether we may consider this square as one of the lungs of St. Martin's parish: if it is, I fear its respiratory action must be somewhat impeded by the large obstruction now formed in its centre.

I cannot take leave of this square without a passing word of praise on the clever and original design of the Panopticon, the successful work of a talented young member of this Institute.

Trafalgar-square claims a front rank in our list of "open spaces," more particularly when putting forth its claim as "the finest site in Europe." When the decorative accompaniments to Nelson's Column are completed, and George IV. is allowed to have an equestrian companion on the now vacant pedestal, we may perhaps be better enabled to decide upon the merits of Trafalgar-square.

Of the Piazza proper of Covent-garden, I may remark that it was designed by Inigo Jones in 1631, with the arcade as at present on the north and east sides, the church on the west, and the wall of Bedford House on the south: the mansion was taken down in 1704: next this wall was a grove of trees where the market used to be held: in the centre of the square was placed a column with a dial.

Gay has well described the church and the square in these expressive lines:—

> "Where Covent-garden's famous Temple stands,
> That boasts the work of Jones' immortal hands,
> Columns with plain magnificence appear,
> And graceful porches lead along the square."

The present market was built in 1830, our brother member, Mr. Fowler, being the architect.

I must not weary you by a tour through the other squares of the metropolis, in Belgravia, Tyburnia, and Westminster. Bloomsbury, which the Grand Duke Cosmo was taken to see as one of the wonders of England; Finsbury and the Minories, all put in a claim for their "open quadrangular spaces," and in that gigantic effort of Post-office literature, the "Directory," I am told that more than 100 will be found enumerated. I am sure, therefore, I shall stand excused for having presented a selection only.

Of the greens in London, Clerkenwell and Bethnal are the only ones that now occur to me. Strype tells us that a mansion was built on the latter in 1570 by John Thorpe, the architect of Holland House.

Of yards we possess several, but I will only name the two Palace-yards, Scotland-yard, and Whitehall-yard.

The Tenter-ground and the Artillery-ground are both good-sized "open spaces." I believe the latter to be the only one where the military ardour of the citizens has a field for active exercise.

The markets of London, I fear, will not strictly come under the title of my paper as "open spaces," but I cannot altogether pass them over: however disposed I might feel to place them in the condemned schedule, the great improvements which are now making by the Corporation of London, under the excellent judgment of their architect, in the fields of Copenhagen and on the shores of Billingsgate, induce me to look forward to an early period, when the shambles of Newgate-street shall give place to an extension of the paths of literature of Paternoster, and the hides and the beeves, and the fish, the flesh, and the fowl of Leadenhall shall find a more suitable abode, and resign their present site to the enlargement of thoroughfares, and the increase of that important branch of industry and commerce, our colonial market!

There is one attractive feature in most continental cities which unfortunately is entirely wanting in London. I allude to planted avenues of approach, or surrounding Boulevards. What can be more agreeable and refreshing when escaping from the town's noisy streets than the shady repose of a leafy avenue? The effect both on entering and on departing is materially affected by the character of the thoroughfare. I trust, therefore, the day is not far distant when, in direct contrast to our New-road and City-road, Curtain-road, and New-cut, we may have a spacious open Via Regia from the Regent's-park to princely Hampstead, in accordance with the noble design of the accomplished Professor of Architecture of the Royal Academy.

My brother architects will readily recal to their minds those lines of Spratt's, introduced in the "Parentalia":—

> "Fountains and trees our wearied pride do please,
> Even in the midst of gilded palaces!
> And in our towns that prospect gives delight
> Which opens round the country to our sight."

I fear by this time your Cicerone—like many others of his class—must have nearly exhausted your patience. May I ask you kindly to extend it to me for a very short period, while I detain you with the most important part of my subject, "St. Paul's-churchyard."

Our indefatigable antiquaries have put in a claim for a temple to Diana on this spot, but Wren, who had a good opportunity of forming a judgment when preparing his foundations, discovered no corroborative proof in support of Apollo or Diana. Sir Christopher's own words are,—"I must assert that having changed all the foundations of St. Paul's, and upon that occasion rummaged all the ground thereabouts, and being very desirous to find some footstep of such a temple, I could not discover any; and therefore can give no more credit to Diana than to Apollo." And in the excavations for Messrs. Cooks' warehouse, no fragments of great antiquity were found, excepting the Runic stone, a cast of which our brother member, Mr. Knowles, has kindly presented to the Institute, and several short pieces of deers' horns: a Stukeley would immediately connect these with a fane to the goddess, and rear his temple with the same facility as a Paleologist constructs his gigantic monsters from a dental fragment, or a solitary vertebra. I should much prefer some columnar shafts and Ionic volutes to these pieces of deers' horns, which I think may possibly have been intended to form rosaries for paternosters. A statue, however, of a Roman soldier of the 2nd legion was found near the neighbouring Ludgate, and as the topographical inscription under the sculptured boy in the adjoining Pannier-alley informs us,

> "That if you search all London round,
> Still this you'll find the highest ground,"

it may be reasonably inferred that the site of St. Paul's Churchyard formed an important part of Roman London.

I may here perhaps be allowed to remark, that I doubt whether we have ever justly appreciated the importance and size of the metropolis in its Roman days: the numerous fragments of mosaic pavement that have been found, the Hypocaust at the Coal Exchange in Lower Thames-street, the numerous specimens of pottery and coins, and the great accumulation of *débris*, all tend to show that very considerable buildings must at that period have occupied sites now covered by far less substantial erections.*

S. Angell.

PREVENTION OF SMOKE FROM OUR ORDINARY FIRES.

Admitting, as seems clear, that it is a sufficiently simple and, moreover, a profitable matter to consume the smoke of large *furnaces*, there remains behind the great question of what is to become of the smoke issuing from the *one million* chimneys of our 300,000 private houses in London! That is the difficulty which if any man can satisfactorily solve, he will become one of the greatest benefactors of his age.

For myself, my desire in this letter will be abundantly gratified if I can, in some degree, induce our men of science, our mechanicians, and our philanthropists, so to consider this great question, that ultimately, in the progress of our social reforms, the nuisance of smoke may be utterly abolished from our large towns.

It is known that anthracite produces little or no smoke, but for private fires it possesses the disadvantage of being slow to kindle, and when kindled, it burns with a dull visage, extremely unlike a John Bull Christmas fire, and therefore not to be thought of by Englishmen. The substitution, as has been proposed, of coke, or coke and gas, for coal, is amenable to the same kind of objections, although the coke and gas, or gas and platinum fires, are easy of management, and free of all smoke and dust, and therefore well worthy of consideration.

Cutler's stove, as improved and amended by

* To be continued. The foregoing paper was read at the Royal Institute of British Architects, on the 8th inst.

Dr. Arnott, appears to me, although economical in its working, and possessed of other good points, still amenable likewise to the above objections, of being slow and dull, to say nothing of the pecuniary difficulty of converting every old grate in London into an *Arnot-Cutler* grate, if I may be allowed the expression.

A plan somewhat on the idea of the Cutler grate suggests itself to me, as feasible in many cases, especially with kitchen-grates, viz. to construct the grates with double bottoms, and always feed the fire by supplying the coal between these two bottoms, having previously, each time as required, raked out the cinders from between the two bottoms. By this process, nearly all the smoke issuing from the freshly supplied coals would pass through and around the already incandescent coals above, and be consumed in its transit. The chief objection to this plan would be, that it would be a little troublesome, and *cook* below, and *mamma* upstairs, I fear, would, often thinking only of *self*, neglect the public good.

With reference to the smoke of ordinary fires, a most simple, but not a universally known *old wife's cure* would be almost entirely sufficient, viz. on every occasion after *mending* the fire to hold a sheet of paper or a sheet of iron, or, better still, a sheet of some *pliable* but incombustible substance before the open part of the grate, so as to cause a strong draught: the effect of this, as most good housewives know, is to cause newly-mended fires almost instantaneously to blaze up, so that the coals get rapidly ignited, and all, or nearly all, the smoke set free is immediately caught up by the flame and consumed. But the objection to this plan is, that as in the last case, although it is very simple and very easy, yet people would not be "bothered" with it; and besides an inexpensive slowly smouldering fire is for many hours of the day all that is required in moderate weather.

Another plan suggested itself to me on the principle of a pipe chimney passing say 6 feet up the old chimney, then curving over and descending behind the grate, and again curving round and ascending into the centre of the ignited fire. I find by experiment that smoke will readily be inducted into this *circle*, and if so, it is evident that it would be an easy method of consuming the smoke, but it is a plan which will not do unless some outlet can be found for those noxious gases, the products of combustion; for as this chimney is on the plan of an endless circle, it does not afford an exit to the gases spoken of.

What, then, is to become of us? It appears to me that no plan left for its fulfilment to the individual management of each household can ever have more than partial success. John Bull's house is his castle, and his fire is all the world over his "ain fire-side," and accordingly he must be allowed to sit after dinner with his feet on the fender and with his poker in his hand (N.B. Not the *full dress* poker) to poke and knock about his own coals, no person and nothing (not even the Russians) daring to make him afraid, except high prices. The smoke nuisance must then be abated *for him* from *without;* and I beg, therefore, to propose the following plan for his consideration.

I thought the plan about to be proposed was my own, but, after working at it for two months, I accidentally heard that Mr. Beard had had the main features of the idea tumbling about in his brain for some sixteen years, our chief difference being that whereas Mr. Beard would condense his smoke by pressure, a method which I and others believe to be utterly impracticable,—I would avail myself of the plan shown by Mr. Hedley (see Blue Book on this subject published 1843, p. 127) to be practised with the most perfect success at various manufactories in the north of England, and condense my smoke, &c. by the action of descending water.

The main features of the plan are as follow:—Every fire in London is to have its smoke received into a pipe connected with the chimney-top; these pipes to communicate with a main pipe, which is to pass down the wall of the house, just as the waste water-pipes now do. These house-pipes are to communicate with a street main, and these street-mains are to converge to local centres, where are to be erected steam-engines, to work as vacuum-engines, on the principle of those formerly used on the Croydon Railway. By the action of atmospheric pressure, the smoke will thus be drawn with great rapidity—a rapidity varying with the power of the engine—into *grand* mains connected with vacuum chambers; and as the smoke, &c. passes into these chambers, it will be precipitated by the fall of water on the principle propounded by Mr. Hedley.

The matters precipitated by this water will be soot, tar, &c. (see Blue Book, as above) and water: the solid matter will be retained by a porous stone filter, while the water will pass through into a tank, again to be pumped up and re-employed in the process of precipitating the soot, &c.

Now, I confess that the plan appears sufficiently Utopian, but is it *primâ facie* more so than the plans for supplying London with water by pipes, or with inflammable gas by pipes, were, when first propounded? It appears to me that the question is one merely of money; and I have the opinion of a practical engineer to the effect that it does not present any apparent mechanical impossibilities.

I find that in London there are about 3,000,000 tons of coals consumed annually; and I am informed by Messrs. Easton and Amos, that by consuming the smoke, manufacturers find that they save above 11 per cent. on their fuel; while, in the 54th number of the *Journal of the Society of Arts*, Messrs. Truman, Hanbury, Buxton, and Co. state the saving to be about 30 per cent. but this is by burning inferior coal, unsuited for private use. If, then, we value the coals at 18s. per ton—a low average—we get 2,700,000*l.* as the value of the coals annually consumed; 11 per cent. saved on which is equal to 297,000*l.* a year, which amount saved we should secure in the form of soot and tar, &c. in our reservoirs as before explained.

Suppose from this sum of 277,000*l.* we deduct 20,000*l.* a year for coals consumed by our engines, and 20,000*l.* a year in the form of wages paid to 500 workmen at 40*l.* a year each, and further deduct 60,000*l.* for contingencies, we still have 197,000*l.* remaining of net annual profits, which, on a capital of 1,225,000*l.* at which I estimate the cost of the alteration necessary, would yield a dividend of 6*l.* 6s. 3d. per cent.

But were the smoke totally consumed, the amount that would be saved by the inhabitants of London in washing, and the amount saved in the better preservation of furniture, books, pictures, &c. and in papering and painting the houses, &c. cannot be estimated at less than 1,000,000*l.* a year; while some estimate the destruction of property and the extra expense in washing caused by smoke as high as 3,000,000*l.* annually.

It must not be forgotten, that all methods of consuming smoke by various contrivances applied within each house, result in the setting free of enormous amounts of poisonous gases, &c. as carbonic acid gas, carbonic oxide, and sulphuric acid, &c. all of which would be precipitated into our reservoirs. The plan, also, would render such a thing as a smoky chimney an impossibility, so long as our engines were in order, as a good draught would be constantly operative in every chimney in London; and not only would there be no smoky chimneys so long as our engines were intact, but every chamber in London *nolens volens* would be in a condition of perpetually good ventilation; while the architecture of our house-tops would no longer be disfigured by hideous cans and zinc stalks, and weather vanes, and we should be entirely freed from those "rascally blacks," which are for ever precipitating themselves upon us like a pestilence, and our atmosphere without would be as clear, if not clearer, than that of the Isle of Wight. Floriculture could be carried on without the necessity of Ward's cases! and altogether the health, and the linen, and hands and faces of our population would be in a state hitherto unknown to us!

Arrangements, of course, would require to be made for periodically sweeping the pipes, and also arrangements for allowing the smoke to escape by the old channels, in the event of any isolated engine getting temporarily out of order; but these and a hundred other minor details do not present insuperable difficulties. And again I say, in conclusion, that Utopian as the scheme appears, it is not more so than the idea of the gas movement once was. But by whatever method we are to get rid of our smoke, it is at least in the meantime to be hoped that the law which is shortly to be applied to large manufactories, will be extended to the numerous minor manufactories, such as cook-shops, hotel kitchens, &c. so as to compel a sufficiently careful feeding of their fires to prevent all *gross* smoking; and although we must accept with gratitude each instalment in this matter, still I think it impossible for the philanthropic mind to despair of the time coming when the inhabitants of our large towns will live "above the din and stir of this *dim* spot," and breathe the benignant air of heaven almost as pure as it comes to the open country from the hand of the "ever bountiful Giver of all Good." *

George Wyld, M.D.

COMPETITION FOR BANK AT BRISTOL.

We are informed that the directors of the West of England and South Wales District Banking Company met on Friday last, and came to the following decision as to the designs for their new building, viz.:—The design prepared jointly by Mr. William B. Gingell of Bristol, and Mr. T. R. Lysaght of London, is to be carried out under their superintendence. The premium of 50*l.* is awarded to Mr. E. M. Barry, of London; the premium of 30*l.* to Mr. John Gibson, of London; and the premium of 20*l.* to Messrs. Gabriel and Hirst, of Bristol. Upwards of fifty designs were sent in from all parts of the kingdom.

CONVERSAZIONI.

By a shake of the bag, some of the principal *conversazioni* of the season have been shuffled very closely together. For Tuesday, 30th, the President of the Institution of Civil Engineers has issued cards for the annual large gathering in Great George-street. On Wednesday, 31st, Earl de Grey will entertain the Royal Institute of Architects, and has invited a large number of distinguished persons to meet them. For Thursday, June 1st, Lord Londesborough, as president of the Numismatic Society of London, has invited the entire body of the members to a *soirée* at his town residence in Carlton House-terrace; and on Saturday, June 3rd, Lord Rosse, as President of the Royal Society, will hold his third reception.

RICHARD CŒUR DE LION AND STATUES GENERALLY.

Your correspondent (p. 233, *ante*), who suggests one of the angles in front of Buckingham Palace, as a fitting site for Marrochetti's fine statue of Richard Cœur de Lion, must surely think that statues are merely useful to fill up unsightly vacancies! What is there in common between Buckingham Palace and a work of art, or between this new crumbling palace and a Crusader king? All kinds of sites have been suggested for this statue; but the proposers of the various sites seem to have no idea of the conditions required to render a work of art effective. Had Dinocrates carried out his proposal of converting Mount Athos into a statue of Alexander, it would have required no relief, and invited no criticism, as its entire effect would have been derived from its immensity; but a statue of moderate size requires a frame to impart to it full picturesque effect; and there is not one of the famous equestrian statues in Europe that attract the admiration of travellers, be it that of Marcus Aurelius at Rome; that of Frederic the Great by Rauch, which makes the present king of Prussia blush, at Berlin; that of Emmanuel Philibert, by Marrochetti, at Turin; or that of the elector Maximilian, by Thorwaldsen, at Munich, that would not be utterly lost and unobserved if placed in an open space in Hyde-park, as has been proposed by some for Marrochetti's statue. The frame required depends on the size of the statue,

* At the Great Exhibition of 1851, Mr. G. Dovey exhibited a scheme exactly similar to this proposed by our correspondent. Particulars and illustrations of it will be found in the "Architectural Quarterly Review," p. 196.—Ed.

and I am inclined to think that the site lately occupied experimentally by the model-statue of Richard I. was too confined and secluded to have allowed it full justice. There is but one site in London that fulfils all the required conditions, viz. the north front of Westminster Abbey. Let the statue be placed with its back to the north door of the cathedral, looking towards Whitehall, just at the boundary of the burial ground; and when this shall cease to be a disgrace to the country, and be levelled, the statue will there produce an admirable effect, and be in perfect keeping and character with the surrounding objects. This position is prominent enough, and a thoroughfare open enough, and yet sufficiently enclosed by buildings to form a frame for the statue. The site is architecturally appropriate, as a portion of Westminster Abbey and Westminster-hall existed in the time of the warrior king; and historically appropriate, as Richard was only famous as a crusader in defence of the church, for which he would here appear standing forward as the redoubtable champion. There is no other position in London in which Marrochetti's magnificent representation of the lion-hearted crusader would not appear anomalous and out of place.

R. G.

THE CARLTON CLUB FRONT.

A GENERAL meeting of the Carlton Club has been summoned for Thursday, June 1, to decide finally on the plan of the new house.

Some few years ago Mr. Smirke furnished a plan for an entirely new building, part of which was immediately executed, viz. the present coffee-room. Shortly before the execution of the rest of Mr. Smirke's plan was to be taken in hand, some members of the club started objections to it, and, at a meeting held in April, carried a resolution to the effect that the plan should be greatly altered; two of the principal alterations consisting in the destruction of the present coffee-room, and in shifting the Pall-mall entrance from the centre to the western extremity of the building. The proposal to adopt these alterations was carried by a majority of about twenty in a meeting of not more than eighty members, a small proportion of a club containing 1,500. It now appears that this April meeting has been pronounced by counsel "learned in the law" to have been illegal, and that the club is bound to fulfil its original engagement with Mr. Smirke; and a general meeting has been summoned for Thursday, June 1, to consider this subject. The external appearance of our club-houses is a matter of public concern and interest, and we trust that the members of this great club will have a due regard to the importance of their decision, as affecting public taste and the beauty of a considerable building.

THE QUEEN'S COLLECTION OF PICTURES.

HER Majesty and the Prince have given Mr. S. C. Hall, the editor of the *Art Journal*, permission to engrave and publish a series of pictures selected from their private collections, and Mr. Hall has just now announced the plan on which they will be issued. The collections in question contain many fine works. At Buckingham Palace are choice specimens of Rembrandt, Ruysdael, Hobbema, Cuyp, Paul Potter, Vandevelde, Mieris, Ostade, Wouvermans, Jan Steen, Teniers, Vander Heyden, &c.; and at Windsor Castle there are beautiful productions of Correggio, Titian, Domenichino, Canaletti, Guido, Zuccharelli, &c. together with the renowned Vandyckes, and choice works by Rubens.

At Osborne her Majesty and the Prince have collected works of modern art chiefly of the British School, but with many examples of the schools of Germany, Belgium, and France, numbering upwards of 150 pictures. Amongst them are the works of Callcott, Callow, Cooper, Cope, Corbould, Dyce, Eastlake, Fielding, Frost, Grant, Haghe, Hayter, Herring, Landseer, Leitch, Maclise, Philip, Roberts, Ross, Stanfield, F. Tayler, Uwins, Wingfield, &c. together with productions of the foreign painters, Berg, Delaroche, Kockkoek, Krauss, Airy and J. Scheffer, Van Eycken, Wappers, Winterhalter, and others.

From these several collections, permission has been accorded to select the choicest, with the sanction of the painters, in all cases of living masters, who have agreed to touch the proofs; and we may expect the result will be a work of great interest and beauty. Copies of a number of the pictures may be seen at Messrs. Colnaghi's.

The manner in which this boon has been granted to Mr. Carter Hall, as a recognition of good service done in the cause of the arts, must be exceedingly gratifying to that gentleman, and to all who know him. To show that it is well deserved, it would be sufficient to point to his conduct of the *Art Journal* for nearly sixteen years; but his friends would have no difficulty in educing other proofs. We are glad of the opportunity to express our personal regard and respect for one who has been always ready to lend a helping hand to rising talent, and has done so much to advance the interests of art; and we sincerely hope that he may personally derive that advantage from the privilege, which both her Majesty and Prince Albert evidently desire he should.

WORKMEN'S CLUB FOR THE CULTIVATION OF TASTE.

IT is necessary in this country to urge and assist the adoption of every plan, the successful carrying out of which would be calculated to lead to the formation and extension of refinement and taste among artizans and working men. For this purpose we would propose, after the manner of the German æsthetic societies, institutions for sowing and spreading a sound knowledge of art-topics among this class; for the discussion of philosophical subjects; attention to studies immediately connected with the business in which they are daily employed; and the investigation of the principles on which the different kinds of work on which they are employed, proceed. The operatives would enter such a circle as a relaxation after the drudgery of their profession is over—rest they would find here, and at the same time much to stimulate their ambition. But they should breathe here in an atmosphere of poetry. The excitement raised in it must be purifying; no politics, no stimulants, which brutalise, must enter into a place set apart for calm contemplation, and for the softening influences of the beautiful. We know there are those who rail at poetry as something superfluous, and something never intended for the working classes. "But it is sufficient," says a useful writer,* "for the argument, that poetry appeals to faculties common to all. That is our warrant for their educational development. Who shall pronounce that capacities given by God ought to be idle? Who shall put out the love of beauty which he has kindled? Who shall exclude the bulk of mankind from that rich heritage of noble thoughts which has been bequeathed, with no restriction, to the whole human family?"

F. L.

* Lalor Prize Essay on Education.

ST. PAUL'S IN TWO ASPECTS.

THE removal of the hoarding at the end of Cannon-street has enabled the passers-by to see St. Paul's Cathedral as it was never before seen, and has shown what we have often spoken of—the unequalled beauty of its outline. In aid of the endeavour which is being made to keep the plot of ground at the end of Cannon-street open (and we are forced, by the remarks of one or two of the speakers at the Institute the other night, to remind them that it was in our pages the importance of effecting this was first pointed out),—we would once more appeal to the corporation and to the metropolis generally.

At the time of the great fire of 1666, which purged the City after the plague, the architect of St. Paul's proposed that London should be laid out in a system of streets at right angles. At that time the Corporation of London did not agree with the architect's plan. It is, however, certain that if the wise idea had been carried out, it would not only have been a saving of a large sum of money, but it would also have saved the infliction of many distempers, much loss of life, and of that prostration and adulteration of the natural powers, which render many born in London less energetic and vigorous than those who are natives of provincial districts.

The view of St. Paul's Cathedral, which has been exposed by the removal of the buildings at the east end (at the corner of Cannon-street), is magnificent: it forms a picture which no one who has seen it can possibly forget. Men who have seen this view will, in the next generation, speak of its beauty to others, if it should be, unfortunately, blocked up, and will say how short-sighted were the views, which, for money considerations, prevented the maintenance of so noble an improvement.

There are few "lungs" (as breathing-places have been very appropriately called) in the city; and who can say the value of the space at the east of St. Paul's, even in this respect. Look at it from Ludgate-hill: how pleasant it seems! there cannot be two opinions on the subject by any one who has seen the place. It is said that the site is worth 60,000*l.* and that the money can be realised to-morrow. It will, if blocked up and built upon, be enormously increased in value, and be placed quite out of reach of those who come after. At any rate, the Corporation may keep the land in their hands for a time. We fully agree with those members of the civic body who say that the whole metropolis might fairly be called on to contribute to obtain what is for the benefit of all.

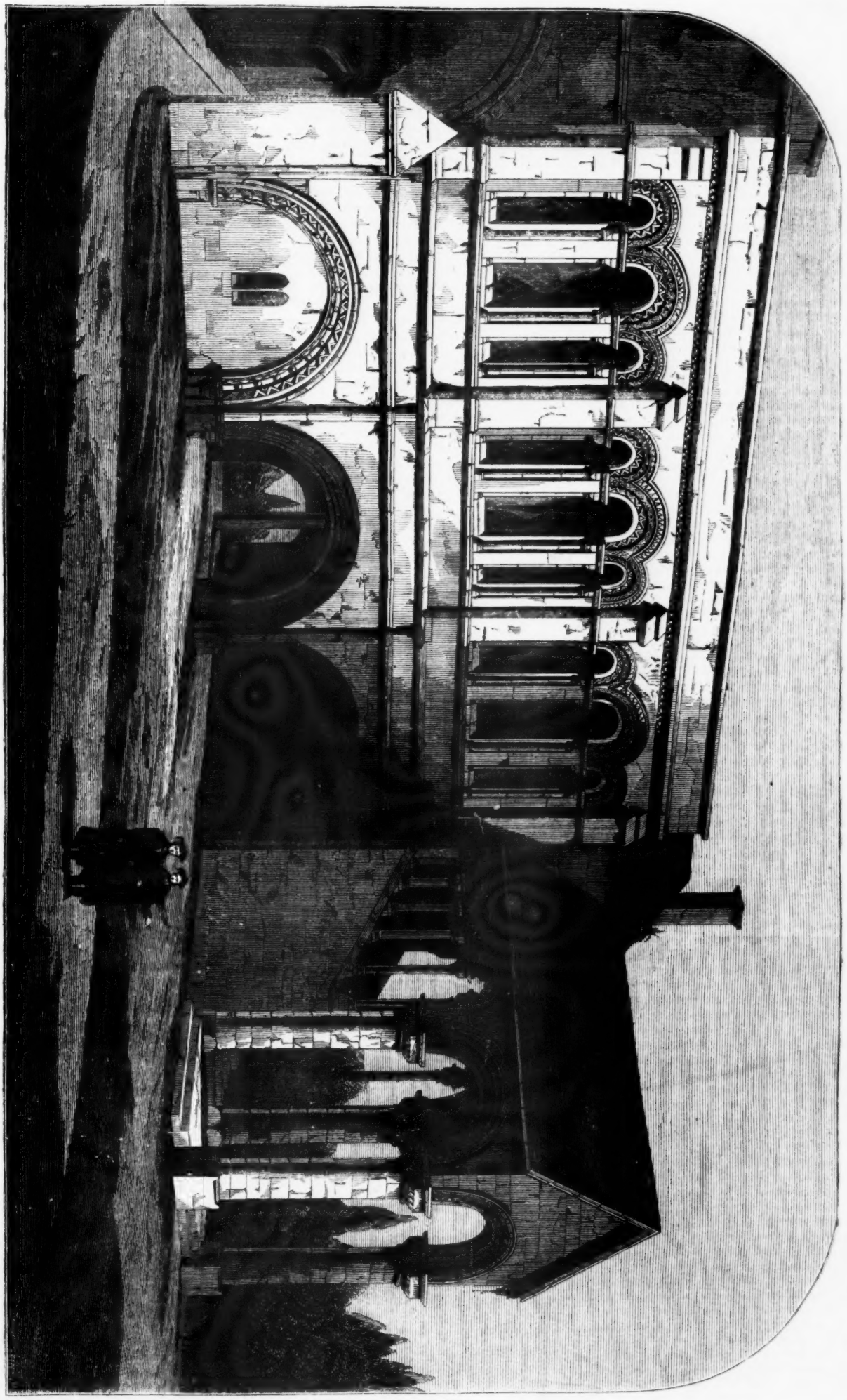
In calling attention to the improvement of the access to St. Paul's, would it not be well to hint to the dean and chapter that it would be a very graceful thing to take the opportunity of effecting the long-wished for change in the railings? If the City gives up 60,000*l.* there would be propriety in the church authorities making this change, and an offer to do so would probably quite decide the point.—C. M. W.

KING'S SCHOOL, CANTERBURY.

WE have frequently in our notices of Canterbury Cathedral mentioned the skill with which the late architect to the dean and chapter, Mr. Austen, carried out the very extensive works intrusted to him in the restoration of that building: he has been succeeded in office by his son, who, as occasion requires, carries on the work connected with the cathedral. He has lately been engaged in erecting a new school-room for the use of the King's scholars, in the place of the dilapidated building they have occupied so long. As our engraving will show, the room is built on the old Norman arches which were said to form a portion of the refectory, and the new work is made to accord with that of nearly 800 years back. The erection of this building has also caused the surrounding space to be laid more open, by the removal of several old buildings and walls which formerly too much enclosed it: a better view of the very beautiful Norman staircase is thus obtained, and if no other good had been gained, this in itself would be a great boon, as there is no other specimen of the same kind to be found in the country.

The cost of the new work has been about 1,000*l.*

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.—At a meeting held May 6, Mr. Jacob Owen, V.P. in the chair, Mr. Parke Neville, honorary secretary, read a paper on the sewerage of towns and buildings, in which, after briefly describing the great works executed by the ancient Romans for the drainage of Rome, he alluded to the great improvements made of latter years in the general system of sewerage, and then proceeded to explain his plans for the improvement and completion of the sewerage of the city of Dublin, and described the works at present in progress under his directions: he also entered into the subject of house drainage, and recommended the use of vitrified stoneware pipes for the purpose, in preference to drains built of rubble masonry or brickwork; and in conclusion, brought under the consideration of the Institute some of the plans for house drainage laid down by the Board of Health in London. A discussion followed. On the 20th, Mr. McCurdy read a preliminary paper on "The adaptability of style to purpose and design," which was referred to the council for publication.



KING'S SCHOOL, CANTERBURY.

EXHIBITION OF STUDENTS' WORKS AT GORE HOUSE.

THE exhibition of the works of the advanced students of the provincial and metropolitan schools of art, at Gore House, Kensington, includes anatomical studies; painting ornament from the flat, or copies; painting general, direct from nature; the human figure from casts and in colour; modelling ornament; the figure, and flowers; elementary design; and technical studies in architectural design, surface decoration, plastic design, &c.

It shows very promising advance in many respects, and should be visited. An interesting feature will be found in the result of a requirement on the part of the Board, that the space within a given outline should be filled with the leaves and flowers of the wood anemone, ornamentally arranged, either treated in self-colours or in complementary. The variety obtained with these few elements is very remarkable.

The *architectural* works of the metropolitan normal school (under M. Semper), are very unsatisfactory. It would have been wiser to have kept them out of sight altogether.

PROVINCIAL NEWS.

Nottingham.—St. George's-hall here was formally opened on Tuesday evening before last. Though not so large as either the Exchange-hall or the Mechanics' Institution, it is adapted for concerts, lectures, &c.

Lincoln.—The building of the new church of St. Michael-on-the-Mount, has been commenced. Workmen are now actively employed, under Mr. Charles Ward, the contractor, in excavating, and laying the concrete for the foundations. The funds are still far short, only 1,700*l.* having been obtained, while the estimated cost of the building is 2,556*l.*

Boston.—The new gasometer here is just completed. It is said to be the largest in Lincolnshire, and will hold 75,000 feet of gas.

Woolpit.—The new tower of Woolpit Church is now advanced to the spring of the belfry windows. The necessity for rebuilding the tower and spire, it may be remembered, arose from their being struck by lightning in July 1852. The roof had previously been restored in oak, at a cost of upwards of 1,000*l.* An appeal is being made by advertisement on behalf of the works in progress.

Heyford.—Under the heading of "A model church," the *Banbury Guardian* says that, from a correspondence handed about, it appears that the rector of a parish in this part of the diocese of Oxford, complains to his churchwardens that "men who chew tobacco in the western gallery during service-time, render that part of the edifice *like an alehouse*;" and the churchwardens assert that "the rector's chancel-window is so ruinous as to permit the ingress of birds, who make the east end resemble *a rookery or a hen-roost*."

Worcester.—Mr. Hawkesley, the engineer selected by the town-council of this city for further preliminary investigation of sanitary measures, has at length inspected Mr. E. L. Williams's plans, and made a tour of the city with his clerk and Mr. S. Purchas, the surveyor to the local board. The springs and other sources of water supply in the neighbourhood were inspected. A local paper states that no opinion was expressed by Mr. Hawkesley as to the plans to be recommended, but that his report is to be ready at the next meeting of the town-council.

Bristol.—The first stone of the new Congregational chapel in Cheltenham-road was to be laid on 22nd inst. The building will be erected from designs by Messrs. Foster and Wood.

Newcastle-upon-Tyne.—A fountain, similar in appearance to one at Osborne, and valued at 200*l.* has been presented to the Infirmary, at Newcastle-upon-Tyne, by Mr. Aspdin, of the Portland Cement Works, Gateshead, for the purpose of ornamenting the pleasure-grounds in front of the institution.——A grant of 300*l.* has been made towards providing a parsonage-house for the incumbent of St. Peter's, in this town, and a further aid of 200*l.* is expected from the governors of Queen Anne's Bounty, in case two or three hundred pounds can be raised by subscription, making the whole 700*l.* or 800*l.* Subscriptions have been commenced, and several contributions promised. It is proposed that the payment of subscriptions be distributed over a period of several months.

Tynemouth.—The guardians of Tynemouth Union met last week at North Shields for the purpose of examining the estimates of persons wishing to contract for the erection of a school-house and dormitories for the children in Tynemouth Union Workhouse, when the appointment fell upon Mr. John Younger for the mason's work, and Mr. William Taylor for the joiner's work. The building will be forthwith commenced.

Falkirk.—The Wellington statue for this town is now placed on its pedestal. The local *Herald* explains that it is chiselled from a block of freestone from the Red Hill quarry, and declares it to be the best statue of the duke that the writer has seen. "The figure of the duke rests familiarly against the shoulder of his horse, with his plumed hat in his left hand, and the bridle-rein thrown carelessly over the right arm—with the ample folds of his martial cloak so arranged as partially to expose his broad chest, decorated with a star." The statue is to be surrounded with an iron railing, and two lamp-posts of an ornamental character are to be placed near it—one in front and the other behind the statue.

Arbirlot.—The free church of Arbirlot, according to the *Arbroath Guide*, was opened on Wednesday before last by Dr. Guthrie, of Edinburgh. The new building stands on the site of the old manse. It is about 30 feet wide by 68 feet in length, while the height of the walls is 19½ feet, and the perpendicular height of the roof 25 feet. The style of the building appears to be Gothic. The interior is lighted by double Gothic windows, of which there are upwards of a dozen—one of the large windows in the east gable, looking towards the village, being bordered by stained glass. The east gable is the most prominent feature, and is surmounted by a belfry. The architect is Mr. Miln, of St. Andrew's. The architect of the manse is Mr. Alexander Kirk, son of the Rev. Mr. Kirk. The congregation had raised the sum of 773*l.* while they had contracted obligations to the amount of 1,347*l.*—leaving to be made up 574*l.* After the opening, a collection was made, which amounted to no less than 554*l.* 9s. but of this Lord Panmure contributed 500*l.* His lordship also gave the site of both church and manse.

Coolfin.—The Marquis of Waterford is erecting at Coolfin, near his lordship's estate, a race-course, which is to be similar to that at Manchester.

St. Helier's, Jersey.—The college, erected here after the design of Mr. Hayward, is a building of considerable importance. It stands on the summit of a hill, commanding an extensive view. The style is collegiate, and the material used for the walls is native granite from the Saint Brèlade quarries, with Caen stone dressings. The principal school or hall is 100 feet long and 28 feet wide, with an open roof of good design. M. Rossignol was the contractor. The total cost has been 7,000*l.* The college was erected in commemoration of the Queen's visit to Jersey, and it has been founded for the education of the islanders.——A new market has just been completed, under the superintendence of M. Gallichan, the surveyor to the States. It is covered in the centre with an iron rod tie-roof of considerable span. The sides are roofed with galvanized metal, curved. A timber portico faces the street at one end; and at the other end, which abuts also upon a public thoroughfare, there are granite piers and gates.——The Congregationalists are about to erect a new church in Halkett-place, from the designs of Messrs. Poulton and Woodman, of Reading. The building is to be constructed of native stone, random walling, with Caen stone dressings. It is designed after the model of the chapel built by Mr. Poulton, at Winchester (illustrated in No. 563 of the *Builder*). The building is to be lighted mainly from the roofs. The style is Early Decorated. The contractor is M. Rossignol, at the sum of 1,928*l.*——A new cemetery is being laid out, also from the designs of the same architects; and a chapel, in the Anglo-Norman style, to accommodate 100 persons, and lodges and entrances of the same character, are to be erected.——A new bank, of Italian style, has just been finished, under the direction of the surveyor to the States.

THE CARPENTERS' STRIKE AT NOTTINGHAM.

MACHINERY IN AID OF LABOUR.

IN the old and obsolete suicidal attempts of the working classes to destroy spinning-jennies, &c. there was this excuse for them, that the question was a new one, and that to ignorant minds it did appear, on the face of it, as if spinning-jennies were about to deprive them of their means of obtaining a livelihood, while, in truth, these useful machines were but preparing the way for a maintenance, not only to them, but to rapidly multiplying and increasing multitudes of their progeny then as yet unborn, and who, without these machines, would have come into the world without their only obvious, available, or visible means of support, and hence, in fact, without their best friend. Now, however, there is no such excuse of ignorance, even to the most uneducated, far less to men who rank amongst the more intelligent of their order. Will it be credited, then, that in this age of machinery, and of the wonderful benefits it has conferred on *all*, in not only providing, with the utmost and cheapest abundance, many luxuries as well as necessaries required by *all* yet which few could have otherwise afforded, but also in providing *everything* (in the shape of a livelihood) to thousands and tens of thousands amongst a rapidly accumulating population,—that in such an age as this, the *question* of machinery *versus* labour should have been started anew,—not among ignorant clodhopping destroyers of those thrashing-machines which now do work that clodhoppers themselves reject as only fit for machinery or horses to do,—not among mere strike-mad mill-workers of spinning-jennies,—but among a class of men who rank among the most intelligent of those employed in the building trades,—the working carpenters? Yet no: we ought not to cast such a slur upon working carpenters as a class: they know better in the mass; and in many towns throughout the country they have made no objection whatever to the aid of machinery in their trade. It is but a crotchet, entertained by the joiners of one single, town of which we speak.

For sometime past the Nottingham carpenters have been at loggerheads with their employers, and are now on strike, respecting the use of machinery and steam-prepared work in their establishments. This contest, which commenced some years ago with the introduction of steam saw-mills, and then waxed warmer upon the adoption of planing machinery, has now come to a positive collision, in consequence of many of the employers obtaining a part of their mouldings from Hull, where they are "stuck" by machinery, and of others adopting in their shops an exceedingly useful little machine for mortising with rapidity and precision. After a series of angry contentions, a few weeks since, the men employed by Mr. William Smith, of Woolpack-lane, struck unanimously, on one of them being ordered to fix a shelf which had been planed by steam power—the hands employed by Messrs. Greensmith and Lacy abandoned their work in consequence of machine-wrought mouldings being introduced into the shop—and Messrs. C. C. and A. Dennett's men simultaneously quitted their work, upon seeing an apprentice working a mortising machine. These acts were deemed by the employers to be so extremely unjustifiable and tyrannical in their nature—so much the result of mistaken views—that on consulting together upon the subject they came to the determination of showing themselves unanimous in resisting, or rather in not giving way to them. After a series of notes had been exchanged, on 11th instant the united masters met a deputation of the workmen's society, for the purpose of discussing their differences, and striving to come to some amicable conclusion. This meeting was held at the Crown Inn, Long-row, and consisted of between twenty and thirty employers, and nine operatives.

The *Nottingham Review* reports the discussion which followed at full length; and the arguments sustained by the masters were so forcible and so clear, that if their mistaken operatives are not convinced by them of the absurd error into which they have fallen, we think their case is hopeless; and for our own part, we feel it quite superfluous to add anything to the force of this report, unless it simply be that, even although the employers should be entirely mistaken in believing that the working carpenters of Nottingham will be benefited instead of injured by the introduction of the new mortising or other machines,—as, surely, they themselves must now admit that they already have been by steam saw-mills,—still the attempt of the Nottingham carpenters to stem the tide of machinery, and expel it from their own particular field of labour, is about as hopeless a task as

was the old woman's endeavour to sweep out the ocean with a mop.

If mortising machines are objectionable, and "would" be injurious to the working carpenters (all their arguments, be it noted, are based on woulds and mays and ifs: the deputation who attended had not a single fact—a solitary case of adversity—to fall back upon),—why, by parity of reason, do they allow the use of planes and chisels? these are mortising machines; and if they could compel their employers to return to the more primitive flint knife of the savage, who cuts and carves so ingeniously with it, perhaps that would benefit the working carpenters of Nottingham,—or else not. The one case is assuredly quite as rational as the other, and to men of soft brains it really would appear that if all mortising were obliged to be done with a flint knife, it would take an immense number more of carpenters to do the work than it now does with the mortising chisel or plane. Yet we question whether even these, weak as their understandings were, would not soon begin to have a glimmer of doubt on the subject, and to suspect that perhaps in place of increasing the employment of mortisers, such a suppression of "machine" work would only diminish the demand for mortising, and play the deuce with the whole trade in it. And precisely so, on the other hand, the introduction of still more improved mortising machines than the hand chisel, in place of diminishing the employment of mortisers, will assuredly only increase the demand for mortising, so cheaply, readily, and rapidly done, and thus improve, in place of injuring, the prospects of the trade operatives.

But to return to the meeting of which we spoke: the result of the whole proceedings was, that at an adjournment, the employers again met in great force, and, after considerable discussion, agreed, without one dissentient voice, to the following resolution:—

"That the master builders of Nottingham, being unanimously resolved to adopt all such facilities as they think will enable them satisfactorily to carry on their business, are determined not to allow any of their workmen to dictate the nature or extent of machinery or machine-made articles they shall employ; and that they give notice that the workmen hereafter employed by them be expected to acquiesce in this arrangement."

This, by Saturday last, was to be published in every shop in the town, and the operatives will have now had an opportunity of deciding what course they will adopt; but the only wise one, as remarked by the local paper alluded to, will be to return to their employment, "determined to make themselves acquainted with the more skilful appliances of the age, to improve their individual position, and to elevate their profession." In the kindest spirit, and with the greatest consideration for their welfare, we implore them not to waste their means in the madness of a strike.

EXTENSIVE FRAUDS UPON BUILDERS.

DOUGLAS, HURST, MARSH, AND HURST *v.* AUSTIN.—The plaintiffs in this action, in the Marylebone County Court, are builders' carters, and they separately sued, for a week's wages, the defendant, a builder.

Mr. G. Keene, solicitor, said of all the impudent actions ever brought in a court of law, the present was the worst. The very men who now sued his client ought, if justice had been done, to be transported. Mr. Austin had discovered a system of frauds upon builders deserving their immediate notice. The three men who now sued his client were considered confidential, and had daily been entrusted with moneys to purchase materials of a nondescript nature. In the suburbs of London, where so much building was going on at present, it became necessary to found new roads, and the builders found no material so cheap or serviceable as broken crockery for the under part. The depôts for this material were the various dust-yards, and his client sent the three plaintiffs out with horses and carts to purchase this *débris*. He gave them moneys to pay for it, at the rate of two shillings per load. They each, upon an average, collected four loads a day of this core, and for a long time drew two shillings per load. Mr. Austin fortunately discovered that his men had only paid to the dust contractors eighteenpence per load throughout the numberless loads they had charged him two shillings for; and finding that other builders had been similarly plundered, he gave all the plaintiffs into custody for embezzlement. At the Marylebone Police-court, the magistrate, at the intercession of Mr. Austin, somewhat reluctantly discharged the three prisoners; and intimated that the least Mr. Austin could do would be not to take these men again into his employ, and to mulct them of their wages due. The leniency shown to these fellows was acknowledged by three summonses. He contended that, under these circumstances, workmen were, in law, under the same ruling as domestic servants, and that the plaintiffs could not recover. Mr. Keene then called Mr. Fell, the chief clerk to the police-court of Marylebone, to corroborate his statement as to the magistrate's intimation to withold all wages due.

Proof was given of the receipt by the carters of two shillings per load, and that they paid but eighteenpence.

Mr. Austin denied the assumption of the men as to their privilege of buying this core as cheap as they could, and charge the money advanced, and said he could produce many of his brethren who had suffered from precisely the same fraud as the present, and he hoped the system of robbery practised would be made known to the trade.

The Judge (Adolphus) said: Well, I certainly have some outrageous claims before me, but I cannot reconcile the present with any plaint. Mr. Austin has a complete answer to the case. The magistrate, if he had known or foreseen the present vexatious proceedings, would not, I am convinced, have listened to the merciful appeal of the defendant. I have no hesitation in giving a verdict for the defendant, and shall allow costs against each of the plaintiffs.

PROPOSED WESTMINSTER BRIDGE.

YOUR publication of the 20th instant contains a description of the iron bridge about to be constructed at Westminster, under the direction of Mr. Thomas Page, engineer to the Board of Works, accompanied by two elevations, one of the bridge itself, and the other of one of its arches.

Having been employed by Mr. George Rennie, junior, in the month of April, 1850, to make a drawing from his designs for Westminster-bridge—a copy of which was subsequently shown in the Great Exhibition of 1851—I was struck with the similarity of the designs published in "The Builder" to that drawn by me, they being, in fact, with a few slight deviations, nearly fac similes, both in the dimensions and shape of the arches; the decorations of the spandrils and parapets also bearing a close resemblance, and the arches being now represented as elliptic instead of Gothic, as originally shown in Mr. Page's Parliamentary drawings.

The following are the comparative dimensions.

Each design has seven semi-elliptical arches.

Mr. Page's.		Mr. Rennie's.	
1st arch,	95 feet span.	1st arch,	94 feet span.
2nd ,,	105 ,,	2nd ,,	100 ,,
3rd ,,	115 ,,	3rd ,,	120 ,,
4th ,,	121 ,,	4th ,,	130 ,,
5th ,,	115 ,,	5th ,,	120 ,,
6th ,,	105 ,,	6th ,,	100 ,,
7th ,,	95 ,,	7th ,,	94 ,,

Giving for Mr. Page's design 751 feet, and for Mr. Rennie's, junr. 758 feet total waterway, making a difference of only seven feet total waterway, and the rise of the centre arch in each case being the same, viz., 20 feet. H. ANDREW.

MANUFACTURE OF GAS AWAY FROM LONDON.

YOUR correspondent, "W. H. B." whose letter appeared in your impression of the 13th inst. is probably not aware that a project to manufacture gas for London at the Coal-fields was started ten years ago, but was found, after investigation, to be impracticable, owing to the great cost of a main 120 miles long, and to the supposed loss from leakage under the necessarily great pressure required to transmit the gas so far.

"W. H. B." supposes that the "advantage is obvious" of sending coke to London, in lieu of coal, on account of its greater lightness, but forgets its greater bulk, and consequent higher freight.

The project to which you allude in the foot-note to the above letter—of which Mr. J. Simpson is chairman, and Mr. Clegg the engineer,—is to bring the coal to London, and to convert it into gas on the banks of the Thames, and to supply it into the gasholders of the existing companies. The works will be sufficiently distant from the metropolis to avoid any chance of their becoming a nuisance, and yet so near that the capital necessary to be expended in mains will be compensated for by the saving of all land carriage of the coals, and other advantages.

S. W.

TOWER HAMLETS SEWERS AND SEWERS-RATES.—From a Parliamentary return made by the Metropolitan Sewers Commission, into whose hands the Tower Hamlets district came in 1847-8, it appears that the amount of rates collected from that district from 1843 to 1847 inclusive, amounted to 41,501*l.* while the sum laid out in new sewers was 28,923*l.*; and that the rates from 1848 to 1853 inclusive, amounted to 31,291*l.* while the expenditure on new sewers was 22,151*l.* To the expenditure of course must in both cases be added that for repairs and cleansing of existing sewers and other outlay.

Notices of Books.

Miscellanea Graphica: a Collection of Ancient, Mediæval, and Renaissance Remains, in the possession of the Lord Londesborough. Illustrated by FREDERICK W. FAIRHOLT, F.S.A. No. I. London: Chapman and Hall.

UNDER the above title, Mr. Fairholt has commenced the illustration of the very extraordinary collection of works of ancient and mediæval skill, made by Lord Londesborough. We scarcely like the word "Remains," as it applies to portions of a whole, and gives an idea of incompleteness, whereas nearly every object that is to be represented is perfect. The extent of the collection may be judged of from the terms of the announcement, that "*each* volume of the present work will be completed in nine numbers. Each number will be published quarterly, and will contain four plates," one in gold and colours. The ninth part will include an index and historical treatise, to form introduction to the volume when bound. The well-known skill of Mr. Fairholt as an antiquarian draughtsman, is a sufficient assurance as to the manner in which the work will be executed. The illustrations in the first number are engraved by the artist himself, and consist of jewels of the 16th century, decorative vessels for the table, shield of *cuir bouilli*, and objects in ivory.

The Old Printer and the Modern Press. By CHARLES KNIGHT. Murray: Albemarle-street. 1854.

To this charming little work is prefixed the appropriate and pleasantly-worded French motto, "*Plus on lit, plus on lira; plus il faut, plus il faudra des livres,*" from *L'Histoire des Français des divers Etats.* As for Mr. Knight's volume itself, no one can sit down to it without being betrayed, as we have just been, into an expenditure—we cannot call it a waste—of much more time than he may have at the moment to spare even for such a purpose. It is needless for us to offer any special recommendation of such a work by one who has already done so much to popularize useful and entertaining knowledge, and to bring "the modern press," in the higher and better phases of its cheap and periodical literature, to its present state of development. We most cordially sympathise with the eloquent support of free popular libraries with which Mr. Knight concludes his little volume, the second part of which embraces a comprehensive view of the progress of the press to our own day, especially in relation to the important subject of cheap popular literature, while the first, together with an interesting biography of Caxton and his efforts, gives a compact narrative of the state of knowledge before the invention of printing at all.

Miscellanea.

SLEDGE RAILWAY SCHEME.—A new project has been patented, under the title of "Daft's Improvements in Inland Conveyance, as applicable to Railways." It begins with stripping the carriages of their wheels, axles, springs, and iron framework, and the line of its tunnels, embankments, &c. and its iron rails, substituting a wedge-sided wooden rail for the latter, and light sledges for heavy carriages, the only wheels used being those of the engine, which are ringed with india-rubber, to enable them to take a sufficient grip of the sledge rail, the rubber being so united with the iron rim of the wheel as to be incapable of either yielding by friction or of being torn off. For mere feeders to railway lines such a project may be available from its extreme economy, but for any main trunk, or even branch line, the advantages of this "Daft" scheme are not so very certain.

ARCHITECTURAL EXHIBITION IN GLASGOW.—We wish to draw the special attention of our professional and other readers to an advertisement in our present impression, announcing an Architectural Exhibition at Glasgow, influentially supported by the Architectural Institute of Scotland, and various noblemen and gentlemen, and which is to be held in December next. Committees of Management at Edinburgh and Glasgow have been appointed, and also Committees of Sections. The Committees of Management are anxious to secure the cordial support of all who feel more especially interested in such an Exhibition, and we are confident the London architects will not fail in supporting their Scottish brethren on an occasion such as this.

IMPROVED DWELLINGS AT LIVERPOOL FOR THE WORKING CLASSES.—An influential meeting was held on Wednesday in last week in the Public-hall, Hackin's-hey, to decide upon the formation of a local association for improving the dwellings of the industrious classes. Archdeacon Brooks presided, and appropriate resolutions were passed approving the plan of forming in Liverpool a branch of the metropolitan association; and a committee was appointed to carry out the object. Twenty-two cottages have lately been completed in Upper Frederick-street, Liverpool, on the plans exhibited by Prince Albert in Hyde-park. They have not been inhabited long enough to show any sanitary results, but the pecuniary results are said to be satisfactory. They cost, including land and all extras, 4,200*l*. They let, as fast as completed, at rents varying from 4s. to 5s. 9d. per week, by which they yield a gross rental of 308*l*. per annum. If from this sum 98*l*. for repairs, bad debts, rates, &c. be deducted, a net rental of 210*l*. remains, or a return of five per cent. per annum on the total outlay.

INSTITUTION OF MECHANICAL ENGINEERS.—The members of this institution met in week before last at Birmingham, and several papers were read,—one of them by Mr. Robert Jobson, of Dudley, on an improved mould for casting metals, the invention of Mr. John Jobson, of Litehurch Works, Derby. "Its object," says the *Birmingham Journal*, "is to facilitate and economise the moulding of iron and other castings, by making a reversed mould in plaster for both sides, those reversed moulds being accurately fitted together in the first place, and then subsequently used as blocks upon which the future sand moulds for casting are made by the simple process of ramming, without any care being required to insure a perfect fit between the two moulds, except in the case of making the original blocks. . . . . The process was shown to the meeting, illustrating the rapidity with which it was effected, and the freedom of the undressed castings from what is technically known as 'fin' was also noted as very remarkable."

KILKENNY ARCHÆOLOGICAL SOCIETY.—The May meeting of the Kilkenny and South-east of Ireland Archæological Society was held, on Wednesday before last, at the Society's apartments, in Patrick-street, Kilkenny, Mr. Joseph Burke, P.L.I. barrister-at-law, in the chair, when no less than thirty-one new members were elected, a number only exceeded, in the five years' existence of the society, at one previous meeting, when forty names were added to the list of members. Mr. Graves called attention to a series of lithographs of ancient Irish crosses. Some letters, with accompanying papers or remarks, were then read, and the secretary laid on the table the printed proceedings and transactions of the society for March, now ready for delivery, as the second *fasciculus* of the part for 1854. Various donations were then presented, and Mr. Graves gave some account of a recent discovery of ancient architectural remains and armorial bearings of the Shee family, in a house at Kilkenny; and a communication from Mr. W. Hackett, of Midleton, on ancient boundary marks, was read. The papers subsequently submitted to the meeting were as follow:—"Cromwell at Carlow," by Mr. R. Malcomson, of Carlow; "Architectural Notes on St. Mary's Collegiate Church, Youghal," by the Rev. Samuel Hayman, of Youghal; and "Observations on Tulachs" (or sepulchral mounds), by Mr. John O'Daly, of Dublin.

WINDSOR ROYAL SOCIETY FOR IMPROVEMENT OF DWELLINGS.—At the annual meeting of this society, it was reported that the model cottages erected last year had been highly successful, having already yielded at the rate of more than 6 per cent.; and that, therefore, it had been determined to erect twenty-eight additional tenements, at a probable cost of 2,800*l*. The model lodging-houses had not succeeded so well as the model-cottages; nevertheless, a dividend of 4 per cent. on the whole capital, for the nine months preceding, was declared, and the report adopted. The twenty-eight new cottages are expected to be completed by 1st of June.

PANYER-ALLEY, CITY.—I beg leave to ask you what has become of that ancient "landmark of the highest ground in London," which stood in Panyer-alley, at the top of Newgate-street? The "landmark" was the figure of a boy carved in stone; a copy of it will be found in "Hone's Table or Every-day Book." I hope somebody is responsible for the preservation of the original. I cannot conceive that it has been lost sight of by the corporation of London, whose veneration for ancient matters is well known.—A CITIZEN.

SALE OF MR. GWILT'S LIBRARY.—It may be useful if we draw attention to the advertisement of the sale of the library of Mr. Joseph Gwilt, by Messrs. Puttick and Simpson. We understand there are few private libraries so rich in works on the history and science of architecture as that of Mr. Gwilt.

SILICA IN THE ARTS, &c.—At the Royal Institution a paper was lately read by the Rev. J. Barlow on this subject, in which he pointed out that besides insoluble substances such as glass, silica formed a soluble glass when united with an alkali such as soda alone, which soluble silicate or glass was applicable to several purposes, such as the protection of building stones from decay, occasioned by the sulphureous acid of towns or otherwise, the carbonic acid of the air being regarded as capable of decomposing the *soluble* silicate, leaving the silica as a deposit, but more probably by the conversion of the soluble silicate into an insoluble by its conjunction with lime, magnesia, or other bases in the stone. Another proposed use of the "water-glass" was that of hardening cements, mortars, &c. so as to render them impermeable by water, or waterproof, and acting as a substitute for size in whitewashing, carbonate of lime, mixed with a weak solution of water glass, not being easily removable as whitewash, or when a coat of common whitewash is washed with one of water glass. The Stereochrome of Fuchs was also explained as an application of the formation of insoluble cement by means of water glass.

CHURCH ACCOMMODATION AT WESTMINSTER.—The Marquis of Bristol has promised to contribute 500*l*. the Earl of Derby 500*l*. and Sir W. Farquhar 500*l*. towards a fund of 15,000*l*. for increased church accommodation in the parish of St. James, Westminster. The Bishop of London offers 1,000*l*. on condition of 4,000*l*. being subscribed in sums of not less than 500*l*. The parish contains 20,000 poor, and there is not free church accommodation for more than 810 adults.

WORKMEN'S FUNERALS.—In reference to this subject, a prospectus, with drawings, has been sent us, from Boston, Lincolnshire, of "Massingham's Patent Funeral Car and Bier," as supplying a desideratum towards the attainment of a suitable mode of conducting workmen's funerals. In this case, however, the friends, instead of carrying the coffin, may only be called upon to aid in moving the car by means of handles at the sides and ends. The whole is arranged very becomingly, either with canopy and pall, or pall alone, and probably for the conducting of funerals to a distance of several miles, as in many metropolitan funerals, such an arrangement would be better than the simple Scottish mode of dispensing with either car or bier, but certainly either of these modes is, at all events, preferable to the noxious and reprehensible system of hiding and confining the bearers under the pall.

THE INJURY TO HANWELL CHURCH.—The following are some particulars of the injury done by lightning to Hanwell church. The church was struck on Tuesday, the 9th ult. about five o'clock in the afternoon. The clock which was fixed in the south side of the tower was blown out from its place across the road into a garden opposite, and several bricks were picked up upwards of 100 feet from the church, in an adjacent field. The spire is forced considerably out of the perpendicular. It has, I believe, been condemned by the district surveyor, and the scaffolding for its removal will be got up as soon as possible. The works of the clock at the time of the accident were taken out for the purpose of being repaired, but several of the wheels, &c. remained, and were picked up with the face. There was, of course, no lightning-conductor.—T. S.

ELECTRO-TELEGRAPHIC PROGRESS.—The *subterranean* line of telegraph between Liverpool and London was opened to the public on 10th inst. messages forwarded and a considerable reduction made in the tariff of charges. The previous charge of 5s. from Liverpool and Manchester to London was replaced by one of 2s. 6d.; and Manchester, Liverpool, and Birmingham were put into intercommunication for 1s. instead of 2s. 6d. No charge is made for name and address in the messages, and despatches by this company are to be delivered free of charge within a circuit of a mile from the different offices. The directors state, that as a system of cheap telegraphs demanded by the mercantile classes is now placed by this company within their reach, it should not be left in the lurch when other tariffs are reduced to the same liberal amount. The mayor and principal merchants of Manchester were present at the first experiment, and messages were sent to Paris direct and responded to in one minute. The Mayor of Manchester congratulated the mayors of Paris on the establishment of a direct communication between the two places, and the Prefect of the Seine sent "warm thanks and assurances of the cordial sentiments of the city of Paris for the city of Manchester."

OXFORD ARCHITECTURAL SOCIETY.—The first meeting of this term was held on 17th inst. The union of the Art and the Architectural Society was reported on as under consideration. The Worcester Diocesan Architectural Society invited the members to their meeting at Coventry, in June. Mr. Bruton read a paper on the proposed new halls for students.

SURREY ARCHÆOLOGICAL SOCIETY.—We ought to have mentioned last week that this new society made a very successful *debût* on Wednesday in week before last, when two inaugural meetings were held at the Bridge-house hotel—Mr. H. Drummond, M.P. in the chair on both occasions. At the morning meeting the council of the society presented its report, from which it appears that the society already numbers 365 members, 38 of them life members. Many objects of antiquarian interest were exhibited at the public meeting in the evening, when Mr. Drummond delivered an introductory address; after which the Rev. Mr. Jessop read an inaugural paper on the religious bearing of archæology upon architecture and art; and the honorary secretary, Mr. G. B. Webb, read a paper on the military road between Staines and Silchester, with memoranda by Mr. Lance on Roman entrenchments and other works in the same district.

THE TIMBER TRADE.—In all branches of the timber trade there is a decided stagnation, caused in some measure by reaction from the high prices of last year, but principally by the discouragement that warlike prospects offer to speculative house-building. The demand for wood is now restricted to purposes only that cannot be dispensed with or postponed. Of Dantzig timber the stock in the London market is large—less of full than under-sized; the sale slow, and prices declining. Of Memel timber, on the contrary, the stock is inconsiderable. For Stettin timber there is no great demand. Memel and Dantzig deals are in good demand all over England: the stocks on the other side are exhausted, and orders are on hand there which will probably consume all the deals converted from round wood during the next month or two. This article is rising in price, and must advance still further. Staves, in consequence of the enormous supply, have become a complete drug in all the English markets. Oak planks and deck deals are being purchased largely by the French government, whose agents are busy, it appears, in the northern Prussian ports; and these articles are both scarce and dear in the London market.

EXETER DIOCESAN ARCHITECTURAL SOCIETY.—The usual quarterly meeting of the Plymouth branch was held at the society's rooms, Royal Union Baths, Plymouth, on 11th inst. The Rev. Mr. Coppard read a paper in continuation of his description of the priory church of Plympton St. Mary. He was followed by Mr. Spence, who read a fourth section of his "Iter Cornubiense, or Journal of Rambles in search of the Ecclesiastical Antiquities of the county of Cornwall." At the termination of the meeting, the secretaries were requested to make arrangements for an excursion, to comprehend the churches of Broad Hempston and Berry, near Totness.

CONSECRATION OF THE RHONDDA VALLEY CHURCH.—This new church, dedicated to Saint David, was consecrated by the bishop of the diocese, with the usual ceremonies, on Tuesday in last week. The edifice, which is in the Early Christian style of architecture, is capable of holding 253 persons, and is built of stone furnished from the quarries of Mr. Lewis Morgan, of the Hafod, the donor of the site, who also contributed the stone for the parsonage-house and schools, now in course of erection. The church is perfectly plain and simple in its internal arrangements.

NEW MACHINE FOR RAISING WATER.—An apparatus for raising water has just been patented by Mr. P. Hillou, of Bucklersbury. It is said to be capable of raising, according to size, from 150 to 40,000 gallons per minute. One machine, about 2 ft. square, is represented as capable of raising 200 gallons per minute. Extreme simplicity of construction is claimed for these machines as a chief recommendation. Another patent taken out by Mr. Hillou, by the way, is one for depriving caoutchouc manufactures of the offensive smell which forms such a drawback on their other advantages.

PARTNERSHIP LIABILITY.—In a case tried lately at the Sheffield County Court, an ironfounding firm sought to recover from two defendants, masons and builders, a sum of 11*l*. 17s. for fixtures supplied under a contract signed by a son of one the defendants, as was alleged for the whole as partners, they having as such paid money to account and promised payment of the remainder due. For the defendants it was urged that the young man who signed the contract alone was legally liable. The judge decided that the defendants had so mixed themselves up with the contractor that all were liable, and gave judgment accordingly.

METROPOLITAN BUILDINGS ACT.—In answer to Sir J. Shelley the other evening, Lord Palmerston said the Government had had under their consideration the introduction of a Bill for the amendment of the Metropolitan Buildings Act, and relating to buildings in general, but the difficulties in the way were so great that he very much doubted whether there would be any possibility of introducing it this session.

RAILWAY MATTERS.—A danger signal has been patented by Mr. G. Dugmore and Mr. G. H. Millward, of Birmingham, by means of which a train may be warned of the stoppage or obstruction of another train in the way. The agency is electro-telegraphic, a battery in the train communicating either through a special inner line of rails connected by copper wires, or through the rails already laid if the electric course be properly insulated, so that the battery might act through the ordinary wheels of the carriage or tender conveying it. When put in action, the electric force is to act on the coming train through the wheels, connected with a bell apparatus, so as to ring it with continued violence. The patentees also provide for the event of the overturn of the carriage, truck, or tender containing the apparatus.——The great shaft or caisson, designed by Mr. Brunel for the Prince Albert Railway suspension-bridge across the Tamar, at Saltash, was launched on Monday before last, and was to be sunk into its perpendicular position end of the week. The shaft is nearly 90 feet long, and between 30 and 40 feet in diameter. When sunk upright, and made tight, a granite pier is to be built, commencing from the Rock of Dun Stone, at the bottom of the Tamar, over which, at high water, there will be no less than 83 feet of water. Mr. Brunel has thus to make his Britannia rock in mid channel; and over it, when built up about 10 feet above high water, two cylindrical piers, about 140 feet in height, are to be built of cast iron, and on the top of these, and on either side of the river, on the top of the stone piers, built from low-water mark, are to be placed the cylindrical beams, nearly 50 feet in length, which are to carry the iron railway, suspended by chains like the Chepstow bridge, which has been found to answer. The advantage of bridges of this description over the tunnel tubes of Mr. Stephenson is the saving of weight, the quantity of iron used being less than half; and as a single line is deemed sufficient, it will be built at less than one-fourth the expense of the double one across the Menai.

PUBLIC BUILDINGS IN DOWNING-STREET. — It appears from a parliamentary paper lately issued, that the expenses incurred in the alterations, repairs, and improvements in the various public buildings in Downing-street from 1831 to 1853 inclusive, amounted in the whole to 24,971*l.*

ENGLISH CARVING.—The *Sheffield Independent* mentions that the head of the Heredia family of Malaga, in Spain, has had carved, by Mr. Hyball, of Sheffield, one of the exhibitors in the Great Exhibition of 1851, an oaken altar-piece, 10 feet high, and worth 200*l.* carved from a design by Mr. Goldie, of Weightman, Hadfield and Goldie, and decorated, gilt, &c. by Mr. H. T. Bulmer, also of Sheffield. Candelabra for it are being executed at Birmingham

ST. JAMES'S BATHS AND WASHOUSES, WESTMINSTER.—From a report just issued it appears that from the opening of this establishment on 14th June, 1852, to 25th March, 1854, inclusive, the bathers have been 168,506 men, and 32,687 women and children. They were in the proportion of three of 2nd class to one of 1st class. The washhouses had already afforded accommodation to poor women upon 54,273 occasions, averaging about three hours at each time. The amount received from bathers and washers was, for the year ended 31st Dec. 1853, 2,038*l.* odd, and the total expenditure 1,791*l.* odd, leaving a surplus of about 247*l.* This first full year's experience of the establishment, therefore, is regarded as eminently successful in conferring benefit on the working classes, while it has proved the establishment to be already more than self-supporting.

ENTRANCE TO THE READING-ROOM, BRITISH MUSEUM.—What are the authorities ashamed of? The state of the catalogues,—the deficiencies in the library,—or the *status* of those who go to read? There must be some cause, or why is the public obliged to go in by a back entrance,—comparatively speaking, like the way to a pawnbroker's shop. If the approach to the chiselled remains of bygone ages must be through massive columns, why should the avenue to thoughts that never die be through an obscure passage? It is to be hoped that the entrance to the reading-room, now commenced, will be from the hall.—W. H. B.

DECAY OF STONEWORK.—I shall be greatly obliged if any of your correspondents can tell me any means by which I can stop the decay of some stonework in a new building. The stone is a Magnesian limestone, but much less compact and hard than that of Bolsover Moor or Mansfield, and much whiter in colour: the decay begins by an efflorescence on the surface, as described by your correspondent, J. B. Davis, and proceeds very rapidly. The edges of the stone suffer most, and some parts of the surface of a stone remain quite sound, whilst other parts have considerably decayed. The building stands in the country, and is not exposed to smoke, or any other action than that of the atmosphere. J. A. D.

FALL OF TWO HOUSES IN ANGEL-COURT, LONG-ACRE.—On Tuesday afternoon in last week, two houses fell with a tremendous crash in Angel-court, Long-acre. A few minutes before the fall several persons observing that the party walls gave tokens of insecurity, ran away with all speed, and in a few minutes the wall fell, dragging with it the roof and floors. The miserable condition of the houses in this court is alluded to in "London Shadows."

THE IMPURITIES IN OUR GAS.—Another report to the City Court of Sewers has been made by Dr. Letheby, professor of chemistry and toxicology in the London Hospital, in which many additional facts are adduced in support of his previous report. To some of these we may have occasion hereafter to refer; meantime we give the conclusions of the new report:—"It may now be asked, whether I can suggest any remedy for the evil. I reply that the remedy is threefold—first, in respect of the manufacture of gas; secondly, as regards its purification; and, thirdly, in a more perfect system of ventilation. At present gas is manufactured from materials which are known to contain a large per centage of bi-sulphuret of iron, and the temperature at which the gas is made is far too high for sanatory purposes. 2ndly. Although much attention has been directed to the purification of gas from one or two of its impurities, little or no notice has hitherto been taken of the most important of all, namely, bi-sulphuret of carbon. This, I believe, has been in consequence of the difficulty which the public has in recognising it, and a hope has therefore been entertained that it would pass unnoticed. It is, however, one of the most formidable of all the impurities contained in coal gas. [To a new and easy way of getting rid of this impurity we lately drew attention.] 3rdly. It is advisable that gas should be burnt outside the room or shop wherever it is practicable; and when this is not the case, the products of the combustion should be conveyed away by special contrivance as speedily as possible; indeed, they ought not to be allowed to escape into the room at all. [On this we have also again and again insisted.] I am quite sure that many elegant [and not a few simple and cheap] arrangements may be suggested for this purpose whenever the public are made aware of its importance." The report was unanimously ordered to be printed.

THE IRON TRADE.—Some of the evil fruits of wanton speculation in this trade may be gathered by anticipation from such remarks as the following, which we quote from the *United States Mining Journal*. "Those who have watched the rapid development of the iron manufactures in the Union, need not the hourly confirmation of our views which is exhibited by the erection of furnaces, and by the multiplication of iron companies, headed by energetic and practical men. So rapid is this progress, that the more prudent of the British ironmasters have refused to countenance any further advance in the prices of iron, well knowing that *every shilling per ton increase in the value of this staple is but another nail in the coffin of their monopoly*. The day has already dawned which shall emancipate us from the thraldom of bringing from Europe that metal which lies in inexhaustible masses at our doors. Already Missouri and Lake Superior iron has been shipped to Sheffield, converted into steel there, and returned to us in cutlery of the finest quality. Ere long, not only shall we dispense with British iron, but the superior properties of our iron will drive the Russian and Swedish steel iron from the British markets." And however boastful our Yankee brethren may be in their anticipations, still they strive to realize their boastings; and our iron trade gambling having already opened their eyes to their own interest in this matter, they are not likely to sleep over it.

A FEAT IN HOUSE-MOVING.—The State House of South Carolina in Columbia, has been removed from the position which it has long occupied, to make room for a new and more imposing capitol, which is to be erected upon its site. The *Carolinian* says,—"This is one of the greatest feats in house-moving we have ever heard of,—no chimneys removed, no plastering disturbed, and, indeed, the Legislature might have been in session without being at all annoyed by the process of moving." The work was done by a Yankee from Massachusetts.

DECORATION OF LECTURE-ROOM AT SHEFFIELD MECHANICS' INSTITUTION.—The trustees of this institution have lately had their lecture-room decorated from designs gratuitously offered, together with superintendence of the execution, by Mr. H. T. Bulmer. The decorations are Greek in character. The ceiling is divided into 156 panels, coloured with crimson, blue, yellow, and pink. The cross beams which divide them into groups are so covered beneath with the Greek fret ornament, and on the sides with the egg and tongue and other ornaments, in colours, as to embellish the ceiling. A cornice, with frieze of the honeysuckle ornament, surrounds the room. The wall facing the gallery is divided into three panels, having ground colours of orange, and borders of red, gold, black, blue, and brown. The panels are divided by black pilasters, covered with an arabesque ornament in green, and bordered with gold. The lower portion of the walls, all round the room, to an elevation of about eight feet, is painted in a deep crimson, with the Greek wave ornament in black as a border. The windows are treated as panel spaces, and are divided by pilasters of same colours and patterns. The wall over the principal entrance is occupied with three panels, to harmonize with those at the end of the room. The gallery front is occupied by a long procession, painted by Mr. Godfrey Sykes, an artist well known at the local School of Art. In this work there are about sixty figures, relieved after the manner of the Grecian bas-reliefs, upon a blue ground. These figures are partly classical and partly characteristic of Sheffield industrial employments; but we have not room for detail. The panels over the door, and at the end of the room, are also filled with classical figures. The general decorations have been executed by Messrs. Rodgers and Styring, of Sheffield. Other improvements, as in lighting, have been effected.

THE CANADA WORKS, BIRKENHEAD. — Messrs. Brassey, Jackson, Peto, and Betts, the contractors for the Grand Trunk Railway of Canada, are here constructing their plant and materials. The main building is 900 feet long by 36 wide. The yard encloses a long water basin, where coals, &c. are landed. A railway also runs from the docks to all parts of the yard. The establishment is divided into two distinct compartments; one for the manufacture of locomotives, waggons, carriages, and plant, and the other for the construction of bridges, all the large ones tubular, and one of them, over the St. Lawrance, a mile and three-quarters in length. The general manager of the works is Mr. Harrison: the "bridge department" is superintended by Mr. Evans. Two large stationery high-pressure engines, of 30-horse power each, supply the motive power to the numerous slotting, planing, punching machines, steam hammers, and other mechanical contrivances for assisting the labour of handicraftsmen. The locomotives are constructed ten at a time. The number of men already employed is upwards of 300, and every week additional hands are being taken on, till the maximum of 600 is reached. The wages of the mechanics range from 28s. to 34s. per week, the average being 31s. 6d. The monthly expenditure in wages alone is now upwards of 5,000*l.*; and, when the works are in full operation, it will be more than double that amount, or at the rate of 120,000*l.* per annum.

GATESHEAD BATHS AND LAUNDRIES.—The shell of this new establishment, in Oakwellgate, Gateshead, is now nearly completed. The architect is Mr. W. Hall, the borough surveyor, and the style is Elizabethan, with a tall chimney, which, according to the *Gateshead Observer*, who promises an engraving, is made to play a pleasing part in the general effect. There will be first and second class baths for men and women respectively; and a plunge-bath may be subsequently added. The washing-stalls will be thirty-six in number, with a suitable provision of drying-horses. The *Observer* is naturally somewhat jealous of an innovation on the ancient *Arms* of the borough, which consist of a goat's head and castle, and are chiselled on the exterior along with a motto, "*Caput inter nubila condit*,"—remarking that while the absence of any motto seems to prove the antiquity of the Arms, their real meaning has long been thus embodied in an old song:—

"Gyetshede her bearde shall freely wagge
Atte her proude neiboure o'er the way
Lette her displaye her flaunting flagge
Onne her Newe Cassel as shee may."

[ADVERTISEMENT.]

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